CONFERENCES - PAMPHLET BOX - 1917

PROCEEDINGS

OF THE

Conference on Agricultural Education held at Simla

on 18th, 19th and 20th June, 1917.

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The first meeting was held on Monday, 18th June, when the following Members were present, except Dr. Mann, who had not yet arrived :—

The Hon'ble Sir Claude Hill, K.C.S.I., C.I.E., I.C.S. (President).

The Hon'ble Mr. R. A. Mant, I.C.S , Secretary to the Government of India, Department of Revenue and Agriculture.

Mr. J. MacKenna, C.I.E., M.A., I.C.S., Agricultural Adviser to the Government of India.

Mr. F. G. Sly, C.S.I., I.C.S.

Mr. H. M. Leake, M.A., F.L.S., Principal, Agricultural College, Cawnpore.

The Hon'ble Mr. C. A. H. Townsend, B.A., I.C.S., Director of Agriculture and Industries, Punjab.

Sir G. Chitnavis, K.C.I.E., Nagpur.

Mr. D. R. Sethi, M.A., B. Sc., Deputy Director of Agriculture, Bihar and Orissa.

Dr. H. H. Mann, D.Sc., Principal, Agricultural College, Poona.

Mr. R. W. B. C. Wood, M.A., Principal-Agricultural College, Coimbatore.

The Hon'ble Mr. H. Sharp, C.S.I., C.I.E., M.A., Educational Commissioner with the Government of India.

Mr. C. W. Waddington, C.I.E., M.V.O., M.A., Principal, Mayo College, Ajmer.

The Hon'ble Raja Sir Rampal Singh, K.C.I.E., of Korri Sudauli.

The Hon'ble Sir P. Pattani, K.C.I.E. (Bhavnagar).

Rai Bahadur Lala Ganga Ram, C.I.E., M.V.O., M.I.C.E., Public Works Department (retired), Lahore.

The Hon'ble Mr. BHUPENDRA NATH BASU (Bengal).

Mr. S. HIGGINBOTTOM, M.A., B.Sc., Ewing Christian College, Allahabad.

BRIGADIER-GENERAL C. F. TEMPLER, C.M.G., Director General, Army Remount Department

LIEUT.-COL. F. W. HALLOWES, Director of Military Farms.

Mr. D. CLOUSTON, M.A., B.Sc., Officiating Director of Agriculture and Industries, Central Provinces and Berar.

Dr. E. J. BUTLER, M.B., F.L.S., Imperial Mycologist, Pusa, acted as Secretary.

The Hon'ble Mr. Srinivasa Sastri Avargal, who was invited, was unable to attend the conference owing to ill-health.

The President in opening the meeting said :—

"I am glad to welcome you to this the first formal conference on the important subject of agricultural education which has yet been convened in India and I wish to express my acknowledgments to you for coming to assist us, in some cases at great personal inconvenience.

"We have a great many difficult questions to discuss and I shall endeavour, therefore, to detain you now only so long as may be necessary to place matters before you in a shape which may, I hope, facilitate our discussions. First of all, I am afraid I must briefly refer to my own remarks when inaugurating the informal meeting at Pusa, to discuss the same subject, which was held on the 4th and 5th of February 1916.

"I then explained why that preliminary conference had seemed to me a necessary precedent to this more formal gathering, since matters were then so fluid that it was necessary to focus them before they could effectively be presented to Local Governments for their views. You have all had supplied to you the deliberations of the conference at Pusa and are aware of the terms of the resolutions then come to. But I think it may be useful to recapitulate them here. The first three resolutions related to agricultural colleges. The first will be found on page

28 of the proceedings, and it was of a somewhat tentative character, indicating that the members were not convinced that all provincial colleges could with advantage teach up to the highest possible plane or all be affiliated to the local university. It was felt, on the other hand, that it was desirable that upper India should have at least one college which should not be restricted to the training of men for departmental requirements. Resolution II indicated our opinion that it should be possible to arrange that students taking the degree course should be able to qualify by an Intermediate examination for employment in the lower ranks of the Department. Finally, in Resolution III, we thought that the vernacular course should not be made a department of the college work though there might be no objection to the giving of instruction in practical agriculture on the college farm or other farms of the department independently of the work of the college. I may have occasion to refer later on to this resolution in connection with the points to be laid before you for discussion.

"Under the second heading which we discussed, namely, 'agricultural instruction for agriculturists,' the conference held, in Resolution IV, that we should abandon any attempt to teach agriculture directly in primary schools. But they desired to reaffirm the desirability of co-operation between the educational and agricultural departments in adapting rural education to rural needs. The conference further suggested that holidays and vacations and hours of study in rural schools might be arranged with special reference to the agricultural calendar. In Resolution V we regarded the Bombay experiment on agricultural vernacular schools as a very valuable one and asked that an explanatory memorandum for communication to Local Governments might be prepared; but we emphasised the view that the success of the extension of the experiment would depend upon the very careful selection of the teaching staff. In Resolution VI it was held that special vernacular agricultural schools should be controlled entirely by the Agricultural Department, relying on the Education Department's co-operation for the supply of a

suitable staff on the literary side. The last Resolution considered at Pusa practically declared the conference's inability to come to a conclusion as to the ways in which cultivators could be educated, or induced to continue their education, in agriculture, in view of the diversity of the stages of agricultural development reached in the different provinces.

"These resolutions were in due course communicated to Local Governments for their views and the replies received are before all of you. I have endeavoured briefly to recapitulate them in the order in which the subject was then taken because it will help perhaps to explain why, in the remarks which will follow, I propose to suggest an important departure from the order in which the subject has been treated both then, and in the memorandum on agricultural education which Mr. MacKenna has kindly prepared for your information. I would, however, first of all reiterate a remark I made at the outset of our deliberations at Pusa, namely, that our needs are "first and all the time to improve the agricultural methods of the country," and we must bear this fact in mind throughout our discussions whatever section of the education question we touch upon. I should like also, again at the risk of repetition, to repeat that to secure this end we must have (*a*) scientific investigation, (*b*) courses of instruction to fit Indians to help in those investigations, (*c*) instruction in practical agriculture, (*d*) courses of practical and theoretical instruction to fit men to give the instruction in practical agriculture as well as to qualify for service in the Agricultural Department, and (*e*) instruction for agriculturists. These needs, you will notice, are the basis of the 8 questions which have been put down as the subject matter of our deliberations in paragraph 33 of Mr. MacKenna's memorandum.

"As a result, however, of such study as I have been able to give to the matter, I am going to venture to propose that this Conference, instead of approaching our subject, so to speak, from the top, should commence at the foundation. The memorandum which is before you has indicated very briefly, but I hope fairly correctly on the whole, the results of experience gained in other

countries in reference more particularly to agricultural instruction falling short of the collegiate standard ; and the subject has been examined from this point of view especially, because we have felt that, unless we can see our way to a widespread development of interest in better tillage on the part of the mass of the people who do not ordinarily proceed to the higher branches of education, we must inevitably fail to achieve the great result which I have ventured to set before you as our objective, namely, the improvement of the agricultural methods of the country at large. You will see that questions 3, 4 and 5, in paragraph 33, concentrate upon this, so to speak, middle school standard of education in agriculture, and I am going to propose to you that we should commence our deliberations by a discussion of the issues involved in those questions.

" Before, however, we embark upon those issues, there is one preliminary matter to which it is necessary to allude and which I think we shall have to discuss in the forefront of our debate and that is the vital necessity for providing a staff of ain ed teachers. Now if I may do so without offence to the educationists present at this conference, I should like to observe that this dearth of qualified teachers is probably more marked in the educational world in India than in any of those countries whose agricultural methods are described in the memorandum. And, as His Excellency the Viceroy has observed on one occasion, the lack of qualified teachers is one of the most serious defects of our educational position in India. I suggest that we may profit, in regard to agricultural education, from the painful experience of the Education Department, and that it is incumbent upon this conference to recognise that no sound system of agricultural education, whether collegiate, high school, middle school or primary, can possibly be devised unless and until we pave the way for it by organising arrangements for turning out annually a sufficient number of duly qualified teachers for our special agricultural institutions. I therefore suggest to you that we should commence our deliberations by a discussion, even if it prove to be a somewhat general and discursive discussion, on the subject of the American, German, Japanese, and Bombay systems

alluded to, in questions 3, 4 and 5, coupled with and in the light of the question detailed in question 8 ; which reads, " in view of the universal experience in all countries of the difficulties inherent in any advance in agricultural education, owing to the lack of properly trained teachers, is it possible, and, if so, desirable to establish, in conjunction with any of the above measures, training classes or departments for agricultural instructors ? "

" In illustration of the importance of grappling with this question of trained teachers, I should like to mention what I conceive to be the situation in the Bombay Presidency at the present time in connection with their vernacular agricultural schools. The Bombay Government have most wisely appointed to their pioneer school at Loni an expert subordinate of the Agricultural Department and also a specially selected headmaster kindly lent by the Educational Department. The staff is, in fact, a very expensive staff, and one reason for its being thus duplicated lies in the fact that our agricultural subordinates are none of them trained in pedagogy. It is perfectly true that the case of Loni is somewhat peculiar. It was rightly decided that the boys coming to that school should continue, in part, their ordinary education, side by side with the special tuition imparted by the Agricultural Department's Officer. But it is, nevertheless, impossible to foresee in the immediate future a time when schools, staffed on the scale of the Loni school, can be multiplied freely all over the country ; and we shall, therefore, I think, in our deliberations have to consider whether we cannot, in conjunction with agricultural educational institutions, organise arrangements analogous to the normal schools of the educational departments for training teachers to take charge of the agricultural schools which it may be decided that we should develop.

" We have in our discussions to visualise various grades of schools, from the agricultural high schools on the American plan to the middle school system analogous to some of those in Japan and the Bombay experimental schools ; and, in approaching the subject of trained teachers, we shall have to bear in mind that the qualifications must vary according to the nature of the institu-

tions which we may come to advocate. The difficulty of focussing discussion must be my excuse for taking a hypothetical scheme of development as our basis and I suggest for your consideration that we should assume for the moment that we should aim at the inauguration, gradually, of a few agricultural schools in different provinces of the grade of high schools, and of a considerably larger number of middle schools analogous to the Loni school. The ultimate goal, in fact, which I put before myself is one Agricultural High School for each district, with several lower grade schools in the district, attached perhaps to demonstration farms, leading up to the High School. I leave aside for the moment the question of seasonal schools on the analogy of those which have come into existence in Germany, because, though we shall have to discuss the matter, it seems to me that those schools if they are suitable to Indian conditions in any province will fall into one category or the other of the two I have mentioned.

"Taking the supposed high schools first, I may assume, I think, that we shall have to staff them from among (*a*) the graduates of those colleges which are affiliated to universities and (*b*) the licentiates of those colleges which are not yet affiliated to a university; while, for the middle schools, corresponding to the Anglo-vernacular schools of the Educational Department, a somewhat less highly qualified staff would suffice, provided it was adequately trained in tuition.

"Proceeding on this assumption, I suggest we ought definitely, and in preparation for the establishment of schools graded somewhat on this basis, to discuss and determine upon the character of the attainments which we ought to require from our trained teachers, and also to indicate some method of training which could be adapted to the circumstances of different provinces so as to conform with the conditions obtaining in their colleges. You will observe that I have not touched upon the question of providing trained teachers for anything in the nature of primary schools since I am for present purposes proceeding on the

assumption that the Resolution numbered IV passed at Pusa, which I have already quoted, will be adhered to.

"At present the courses of our agricultural colleges are, speaking generally, divided into two parts, the first two years' course qualifying for the subordinate agricultural service, while those who wish to proceed to higher studies and qualify for the provincial service go on to study for another two years. This is not a universally accurate description of the process, since I understand that, in the case of the Poona college of agriculture, the University insists on undergraduates going through one year's course after matriculation at an Arts college, and then proceeding for three years to the Poona College ; but, for practical purposes, we may take it that the agricultural degree or diploma connotes a four years' college course, following on the matriculation or school final, divided into two periods of two years each.

"Now, as I have already observed, the staff for any of the agricultural high schools that may come into being hereafter will presumably be recruited from among the graduates of our colleges, and, while it may be necessary, as it is certainly desirable," that those graduates before taking up tuitional work in high schools should undergo a course of training in pedagogy, it is not so essential to consider their case now as it is to consider the case of those who may, as a result of our deliberations, come to be considered the material from which to recruit the head and assistant masters of our middle agricultural schools. In regard to these latter, I suggest for consideration that we have in our agricultural colleges' curricula machinery at hand for turning out approximately what we want. The usual destination of the young man who proceeds to an agricultural college for the first two years only, having matriculated before he goes there, is a post in the subordinate branch of the agricultural service. He may be presumed, by the fact of his having passed the school final or the matriculation, to possess a fair working ordinary education and, as a result of his two years at an agricultural college, to have superimposed upon it knowledge sufficient for

the purposes of tuition in an agricultural middle school. If on the top of those two years we are in a position to offer such a man employment on rather better terms than the subordinate service, as master in such a school, provided that he consents to go through a further period of 6 or 9 months' training in pedagogy, then I suggest we shall have available a man suitable for appointment if not immediately as headmaster, at all events as assistant master in our supposed middle agricultural school.

"In a subject such as agricultural education, where each item depends upon the last, and where it is so easy to argue in a circle, it is extraordinarily difficult to get a starting point for discussion and, as you will have already noticed, I have had to resort to an important assumption. In order to bring into proper relief what seems to me to be our objective in the educational sphere, I would ask you to consider whether it is an exaggerated hope to look forward to a time when every district in the more advanced provinces will have at least one agricultural high school more or less on the American plan and several vernacular or middle agricultural schools on the Japanese or Bombay model. If this is not too extravagant a hope, then we have to pave the way for the preparation and turning out of a very considerable number of trained teachers for these institutions, and the point I want particularly to emphasise is that our training and turning out of these teachers should *precede the inauguration of these schools.* Only so shall we avoid the fate which has overtaken us in the Educational Department where only lately has it come to be recognised that the expansion of education worth the name is limited by our capacity for furnishing trained material for teaching the youth of the country.

"I think I am now in a position to suggest the order in which we should take up our subjects for discussion. I propose to put before you in the first place under four headings the proposition that it is incumbent upon the governments in India to elaborate a scheme for the training of teachers in agriculture for agricultural institutions of the high and middle school and perhaps of the vernacular grades.

"The next proposition which I propose to submit to you is that every province in India should aim at the goal of having one agricultural high school in each district and such number of agricultural middle schools as the circumstances of the district warrant. We shall then have to proceed to a consideration of the question whether we can suggest the type of agricultural middle and high schools which we commend to Local Governments for adoption, always bearing in mind that in elaborating suggestions under this head it is absolutely essential to recognize that the varying conditions in different provinces require a large measure of elasticity and discretion for Local Governments in their application of any general principles to which we may agree.

"If this sequence is observed, we shall have disposed of headings (3), (5) and (8) of the memorandum, and I think that, in conjunction with those subjects, we shall also incidentally have disposed of No. 4, which reads:— 'Would continuation or seasonal schools on the analogy of the German winter schools be suitable in this country?' The fact is I believe that there is no season in this country analogous to the winter in Europe during which agricultural operations are so much at a stand-still that the organisation of schools to fit in with those intervals is possible. That, however, is a point which we shall have the opportunity of discussing.

"There is one aspect of the schools question which requires careful investigation in reference to the principle to which I have alluded that Local Governments should be given a wide measure of discretion in the manner in which they give effect to our resolutions. In some provinces, notably in the Central Provinces, it is felt that the best method of advance will lie in attaching small vernacular schools to government demonstration farms. I cannot see that, if our resolution in favour of establishing middle or Anglo-vernacular farming schools finds favour with the Conference, there will be anything which will prevent the development of such an intermediate scheme. I do not imagine for a moment that we shall approach our subject with the idea that in the resolutions which may be adopted, laying

down certain objectives, we shall be excluding lines of development analogous to those resolutions but not entirely in conformity with them. Nor do I anticipate that, if we arrive at the conclusion that institutions of the Anglo-vernacular middle school grade should be established, where possible, in conjunction with experimental or demonstration farms, we shall postulate that every one of those farms is to have a highly organised institution of the educational type attached to it. Still less, I think, need it be apprehended that the attaching of such an institution to a government farm is likely to have an evil effect on the administration of the farm or on the demonstration staff. If I may diverge for a moment from the subject immediately under discussion, I should like to advert to another apprehension to which I have seen expression given, and that is that it is undesirable to associate teaching with experimentation or research. I should like to remind this Conference that the London University Commission was very emphatically in favour of associating research officers with tuition and it seems to me that the same thing applies to the question of associating tuition with demonstration farms. I do not wish to dogmatise upon the point, which hardly arises in the present connection, but I suggest that the apprehensions of practical agriculturists in this matter may be unduly aroused.

'Having disposed of points (3), (4), (5) and (8), I think it will be convenient if the Conference should then proceed to questions (1) and (2), which, I suggest, should be considered together in a slightly different form. I have just now suggested that we have, in the curricula of our agricultural colleges, machinery at hand for turning out the raw material of the teachers whom we shall so badly want for the development of agricultural schools, and that they may appropriately be recruited from the same grades of attainment as those which supply respectively our subordinate and our provincial agricultural services. On the analogy of the system in vogue in the Educational Department, we should expect the graduates or licentiates who have gone through the whole course of the agricultural colleges to be

qualified to teach in our agricultural high schools, if these come into being, while those who have done only the two years' course would be qualified in a rather higher degree than those in the Educational Department who have passed the matriculation or the school final, especially if, as I have suggested, we establish means for giving the students instruction in pedagogy. Now, at the Pusa Conference, it was feared that there was hardly scope in Northern India for more than one Indian Agriclutural College teaching up to the University standard and affiliated to a University. I suggest that, if, as a result of this Conference, we come to the conclusion that we should recommend the development of a system of agricultural schools, the scope for employment of the product of our agricultural colleges will be enormously expanded. We shall then want not only what we had in view in Pusa, namely, trained men who could take service in the Agricultural Department proper, but also trained teachers for our agricultural schools. I venture to think that this Conference will probably come to the conclusion that such a state of affairs will radically modify the views entertained at Pusa as to the scope for high grade agricultural colleges in Upper India. It is for this reason, and in view of my suggestion that we should first of all discuss the training of teachers for agricultural schools and then go on to the question of establishing agricultural schools in the provinces, that I think we should next go to question (1) which I should prefer to put in the following form. 'In view of the resolutions which may have been passed at this Conference on the subject of establishing agricultural schools in the various provinces, and of arranging for a staff of trained teachers, is it or is it not desirable to modify the resolution relating to agricultural colleges which was passed at the Pusa Conference, and, if so, in what sense ?'

"I have suggested that question (2) in the memorandum could also be considered in conjunction with our consideration of the status of agricultural colleges ; and for the moment I propose to leave it in the form in which it stands in paragraph 33. But I would add this. I have postulated that, if our recommendations

extend to advising Local Governments to aim at establishing agricultural schools of various types, we shall have also to provide means for training teachers in instruction after they have passed the required stages in the agricultural colleges. In other words, we shall have to do what is done in the normal schools and training colleges and attach instructional classes to the agricultural colleges. To these instructional classes we shall have to attract boys of the upper primary school stage, who will be instructed by graduates and those who have passed their two years' training, and such instruction will involve access to the farm lands attached to the colleges. It is conceivable that candidates for the lower grades of the agricultural service may be found among those boys who, first of all, undergo instruction in these instructional classes.

"There remain question (6): 'Should the text books of primary schools be adapted to the agricultural environment of the pupil,' on which subject I do not propose to enlarge—but I hope that the discussions at Pusa will narrow down the discussion of this subject at this Conference—and question (7): "For the illiterate classes should we at present attempt anything beyond demonstration?'—Here again I propose not to detain you now.

"I feel sure that when we approach this difficult subject we shall find it easier to grapple with it in the light of what may have been determined in reference to what is more strictly the educational side of the problem.

"In conclusion and before I summarize my suggestions there is one large question of principle to which I must allude. At Pusa the view was held that, for the present at all events, agricultural schools and colleges must remain under the control of the Agricultural Department rather than of the Educational Department. In a most interesting and suggestive note, which you will find in front of you, written by Mr. Higginbottom, the contrary view is suggested on the analogy of what is the practice in other countries—notably in Canada. Put quite briefly, the view is that,

while agriculture proper, including demonstration, experiment, and research, should continue under the Agricultural Department, tuition in agriculture should be transferred to the control of the Educational Department. I do not think that any one will question seriously the soundness of the general proposition involved in Mr. Higginbottom's contention; but we have always to qualify general views and principles of this kind by reference to the conditions obtaining in the country with which we are dealing. I have discussed this matter provisionally with Mr. Higginbottom and the view I suggested to him is that in India we are hardly in a position as yet, at our present stage of development, to contemplate falling into line with his proposal. Here the Education Department in each province is organised under one Director of Public Instruction, who is an academic person assisted only by other academic persons. He cannot himself undertake outside work efficiently. In other countries, especially in America, Canada, and so forth, there is a large headquarter-staff with an organiser at the head and assisted by a large number of experts. For example, I am told that in the Philippines, there is a headquarter-staff in education with a far larger staff of American educationists than there are Indian Educational Service men in the whole of the Bombay Presidency. We may agree to hope that a time is coming when a large educational organisation will be required in India. But we—the Agricultural Department—are hardly in a position to urge the bringing about of such a change at the present time. It may be wise hereafter, when for instance the Agricultural and Commerce Departments have developed, to put their educational efforts under the Education Department as is done in Canada and elsewhere, but that will only be possible, I think, when the Education Department is remodelled with, for instance, a Secretary to Government, and, under him, a Director of Training, a Director of Agricultural Education, a Director of Commercial Education, a Director of Primary and Secondary Education, and so forth. We may all hope that this time will come soon and I am sure, when it comes, the Agricultural Department will be ready to make over its teaching and vocational

schools to the Education Department; but, until our agricultural education has passed the experimental stage, it will, I think, be far better for the pioneer work to continue to be done by the Agricultural Department. If this be agreed to, then there can be no question, I think, that the work of training our agricultural teachers should also be conducted in conjunction with the agricultural college under the control of the Agricultural Department. It is desirable that these teachers should see something of the working of a big agricultural institution where they will come in contact with the bigger men of the Department and the bigger issues with which that Department deals.

"One more point. It has further been represented from time to time that research officers should be relieved of all work connected with tuition. I have already touched upon this point earlier in my remarks and have quoted the London University Commission as being emphatically opposed to this view. It is quite true that in this country our Agricultural Department is so under-staffed that research has often to be sacrificed to teaching since we have not enough research officers and teachers at our disposal. That is a state of affairs which we may hope will be remedied in the course of time, but I hope I shall find the sense of this Conference to be in agreement with me in the general proposition that, while our department should be sufficiently strong to enable us to avoid handicapping the research officer by requiring him to devote too much of his time to lecturing, we should not commit ourselves rashly to the view that the two functions should be entirely divorced from one another.

Perhaps I may here summarize, in the order in which I propose that we should discuss them, the subjects to which I have referred. You will find a copy of the summary before each of you.

Summary.

(*a*) *Agricultural Schools and provision of teachers.*

(1) Is it desirable to lay down the general principle that a method for providing trained teachers in agriculture should be elaborated in each province adapted

to meet the requirements of the agricultural school system that may be in contemplation or may have been already devised for that province ?

(2) Under the present arrangements in force in most Agricultural Colleges the course is divided into two periods of two years each, the lower course qualifying for the subordinate and the higher course for the provincial service. Is it desirable to recognize that the degree of competency attained in these two courses respectively shoud be laid down as qualifying, subject to any special training in pedagogy that may be determined on, for admission to the teaching staffs of agricultural schools of the status corresponding to middle schools and high schools respectively ?

(3) Bearing in mind the importance of imparting a training in teaching to all those who are charged with instruction in schools of whatever character, is it desirable to require that those who attain to the standards that may be determined on as necessary, under the foregoing paragraph, should, before being recognized as qualified for the agricultural educational service, undergo a period of training in pedagogy ?

(4) If so, how can this most suitably be arranged for ?

(5) In order to have a clear objective, with a view to focussing the development in each province of a definite policy for the expansion of instruction in agriculture, is it desirable to lay down, as the ultimate goal, the establishment in each district of one agricultural school of the status of a high school and of one or more agricultural schools of the status of middle, or Anglo-vernacular, schools leading up to the high school ?

(6) Is it desirable at this stage to consider the type of such schools, or should this be left to the consideration of local Governments ?

(*b*) *Agricultural Colleges.*

(7) In view of the resolutions which may have been passed at this Conference on the subject of establishing agricultural schools in the various provinces, and of arranging for a staff of trained teachers, is it or is it not desirable to modify Resolution I relating to Agricultural Colleges which was passsed at the Pusa Conference and, if so, in what sense ?

(8) Should candidates for the lower grades of the agricultural service be educated at these Colleges or at separate agricultural schools ?

(*c*) *General.*

(9) Should the text-books of primary schools be adapted to the agricultural environment of the pupils ?

(10) For the illiterate classes should we at present attempt anything beyond demonstration ?"

The Conference then proceeded to discuss the subjects referred to in the President's opening address, in the order proposed by him. The first of these was :—

(1) "Is it desirable to lay down the general principle that a method for providing trained teachers in agriculture should be elaborated in each province adapted to meet the requirements of the agricultural school system that may be in contemplation or may have been already devised for that province ?"

The Hon'ble Mr. Townsend said that it would be difficult to decide how to train these teachers, unless some estimate could be arrived at as to the number of schools required in the different provinces.

The President agreed, and stated that it was precisely for that reason that he had postulated certain requirements as the goal to be aimed at. Unless some such definite basis for discussion, even though a hypothetical one, were formulated, it would be almost impossible to arrive at any decision.

The Hon'ble Mr. Sharp stated that in his opinion there could only be one answer to this question. If teachers were required for agricultural schools, they should be trained both in agriculture and in teaching. As more than one type of school were likely to be required, at least two and possibly more kinds of teachers should be provided. Arrangements would have to be made to establish classes where the candidate teacher could practise teaching. And it should also be considered whether these classes should be attached to the Agricultural College, or whether it would be better to send the student over to a regular training college. The student who wished to become a teacher would pass on to these instructional classes, after he had passed through the agricultural classes.

Mr. Wood thought that the agricultural high schools contemplated by the President were rather in advance of present circumstances in Madras. It was also assumed that it was the function of the Agricultural Department to undertake this class of education. If he were merely asked to assent to the general principle that trained teachers should be provided if such work were taken up, then he was prepared to do so.

Mr. Waddington urged the extreme importance of not undertaking teaching until the teachers had been trained. Their value was enormously increased thereby.

Mr. Martin Leake did not think that a sufficient distinction had been made between the two fundamental propositions involved in any attempt to establish agricultural schools. The teacher has first to be taught the knowledge he must subsequently impart, and he must also be taught how to impart it. It was clear that only the latter of these was at present under discussion, but not what was to be taught in the schools. So far

as it went, he certainly agreed with the proposition.

Mr. Sly said that in addition to the question of what was to be taught, others also arose. Should all the staff be trained agriculturists or only some members of it? What degree of training is required? Should all the masters in an agricultural high school be agricultural graduates? Is it necessary that all the masters in a middle agricultural school should have had an agricultural training? Then it seemed to him that some discussion of primary education was required. The discussion started at the secondary education stage, but secondary education is a development from primary education and he would have liked to discuss the foundation, and see what changes were required so as to supply the needs of the rural population and lead on to a system of secondary agricultural schools.

The President pointed out that the subject of primary education, in so far as it touched on agricultural matters, had been discussed at the Pusa Conference and it had been agreed that, beyond giving an agricultural tinge to elementary education, nothing further should be attempted. This view has been very generally endorsed. Hence he had not proposed to touch on primary education, the improvement of which must be left to the Education Department. Of course the Agricultural Department would co-operate by giving suggestions and advice with reference to text-books and so forth. The resolution he proposed to put was merely one of principle.

The resolution was then put and passed unanimously :—

Resolution I. **It is desirable to lay down the general principle that a method for providing trained teachers in agriculture should be elaborated in each province adapted to meet the requirements of the agricultural school system that may be in contemplation or may have been already devised for that province.**

2. The Conference then proceeded to the second reference :—

(2) " Under the present arrangements in force in most agricultural colleges the course is divided into two periods of two years each, the lower course qualifying for the subordinate and the higher course for the provincial service. Is it desirable to recognize that the degree of competency attained in these two courses respectively should be laid down as qualifying, subject to any special training in pedagogy that may be determined on, for admission to the teaching staffs of agricultural schools of the status corresponding to middle schools and high schools respectively ? "

Mr. Martin Leake said that at the Cawnpore College the 2-years' vernacular course was not followed by any further course but was complete in itself, being intended for the sons of land-owners who required a relatively short vernacular course together with practical instruction. The 4-years' English course was quite distinct and the two courses were thus parallel and not consecutive. He did not consider the system under which a course of two years only was given to certain students, while others continued on for another two years, a sound one. The training of a departmental staff was a secondary consideration at Cawnpore, the interests of the zamindar were the most important in both courses.

The President said that though this was a very big issue, and one which had already been discussed at the Board of Agriculture in 1913, it was not material to the present issue. His postulate was that two years' training at an agricultural college provides material for teaching in middle schools and that the 4-years' course provides material for teaching in the high schools. Whether the courses were independent or consecutive was not material from his point of view.

Mr. Wood was not in a position yet to report definitely regarding the efficiency of the latter system, which was that

followed at Coimbatore. It had not been in force long enough for a complete 4-years' course to have concluded. Still, so far as they had gone, the Madras Department was satisfied that the system was working well. The question was discussed at the Pusa Conference and the main arguments in favour of the intermediate qualifying examination after two years are given in the Proceedings of that Conference. Even if he had the staff to run separate courses, he thought he would prefer the present system. The 2-years' men had mostly been taken into the Department. The endeavour was to make them handy practical men. If these men had some further training in pedagogy, say 9 months, they would probably be suitable as teachers in the middle agricultural schools.

Mr. Martin Leake: "May I ask one question? In the case of middle agricultural schools or vernacular schools, are we to train all the teachers in this way or only one teacher who is to be in charge of agriculture in that school?"

The President: "That question will depend entirely on local requirements. My idea was simply that it should be an agricultural school with a headmaster who had been trained in agriculture, thereby determining that the curriculum would be adapted primarily to agricultural developments. It might be a school in which the headmaster and one or two of the assistants had been trained at the agricultural college. That would depend on the size of the school, but the main thing is that it should be emphatically an agricultural school and have a trained agriculturist as headmaster or assistant. I do not think we can dogmatise on that point. Putting it in another way, I should say this in answer to your question. There must be a trained agriculturist in every school under any scheme we formulate, and as regards the high schools, we should be more elaborate."

Mr. Higginbottom said that in reality not two but three courses were under discussion. There was the 2-years' course for non-matriculates given in the vernacular as at Cawnpore and the 2-years' and 4-years' English courses as at Coimbatore.

To provide competent teachers, the whole field should be covered during their training, whether the course were of two or four years' duration, and he did not see how the students who only did the first two years of a 4-years' course could possibly qualify as teachers, because they could not have covered sufficient ground to teach all that would be required. Hence he advocated separate parallel courses of training, a lower for the middle school and a higher for the high school teachers. It was, in his opinion, quite impossible so to devise a 4-years' course that at the end of two years the student would be able, with some additional pedagogic training, to take charge of the teaching in a middle agricultural school. It was absolutely essential that the 2-years' course should be complete in itself.

The Hon'ble Mr. Sharp pointed out that the courses in the agricultural colleges might be assumed to be to some extent analogous to the science courses of the Universities. The agricultural college he would assume to be of the same standard as a University college. If the student, after entry, be equal to a matriculate student of the University, he should have reached, after two years' study, a standard in agriculture roughly equivalent to that of an intermediate science student of a University college, and after four years he should have reached the degree standard. The agricultural college courses should be adapted so as to achieve this result.

The President: "Is it not a question really whether it is possible, in reference to agriculture, to devise a preliminary course of two years, leading up to the full 4-years' course which shall cover the whole field adequately for the purpose? I should like to ask you, Mr. Sharp, does your Intermediate in Science acquire a knowledge sufficient to enable him to teach science in a middle school?"

The Hon'ble Mr. Basu: "Yes."

The Hon'ble Mr. Sharp: "Mr. Basu says 'yes,' but I should feel some slight hesitation in saying so. I think, if he is competently trained how to teach science for one or two years afterwards, he will then be competent to teach in a middle school."

The President: "That being so, is agriculture a thing so apart, in reference to this question, that is not possible to devise a curriculum of four years, of which there shall be a stage of two years at which students who have attained that stage shall be competent to teach, all round, students of the middle class calibre?"

Mr. Higginbottom: "The 2-years' man is ready to teach but he is not ready to go on. Looking at it from an educational standpoint, he is not ready to go on and get a degree in another two years. That is my whole point. We want, when a man has done the 4-years' course, that that course should have in it what would commend itself to educationalists as being worthy of a degree."

The President: "Yes. But I mean is it not possible to organise that 4 years' course leading to a degree, so that the 2-years' course, if a man takes only it, will render him competent for the less troublesome and difficult task of imparting instruction in agriculture to boys of the middle school standard?"

Mr. Higginbottom: In answer to that I would say, as far as my observation goes, it is impossible. I know of no place yet that has succeeded in doing it, though there are a good many places where they have attempted it."

Mr. Sly doubted whether, from his knowledge of the conditions of the Nagpur Agricultural College, the 2-years' course was sufficient to qualify for teachers. The course was mainly in practical agriculture with elementary science, and intended to meet the needs of the local department in recruiting its subordinate staff and also the practical needs of the land-owners. Even the 9 months' additional course in pedagogy proposed would not be sufficient. The existing Nagpur 2-years' course would have to be altered if it is to be adapted for the training of teachers.

The Hon'ble Mr. Basu thought that if only matriculates, or students with the same qualification as matriculates, were taken, the 2-years' course should be sufficient to provide teachers for the middle agricultural schools. Later one, the high schools that have been proposed would doubtless supply a sufficient number of students with enough agricultural knowledge to enable them

in two years to reach a higher standard of agricultural education than can be expected under present conditions. Hence he would hope for a progressive improvement after the scheme had been working for some years. Those who only do the 2-years' course should get something equivalent to the Intermediate Science certificate, while those who did the full four years should get a degree

Even after hearing the opposing views, Mr. Wood still thought that it was possible to make the first 2-years' course of a 4-years' curriculum complete in itself. At Coimbatore most of the purely agricultural training was completed in the first two years, after which the selected students, who were about half of the whole number, did more specialised work in chemistry, botany and the like. Mr. Sethi agreed and said that he thought the 2-years' course at Sabour, which was on the same system as that at Coimbatore, would fit men for middle agricultural school teaching.

The Hon'ble Mr. Townsend said that this system had been somewhat severely criticised by educational experts of the Punjab University, when they examined the Lyallpur College courses recently with a view to its affiliation to the University. They held that the practical and scientific studies should be more evenly distributed throughout the full course. His Department were proposing to alter the courses, so that all students would follow the same curriculum for the first year but in the second year they would diverge into two groups. One group would proceed to the full 4-years' course, the other would finish at the end of the second year. The training of the latter would be more practical and they should supply suitable subordinates for the Department. This plan was to some extent intermediate between those of the Cawnpore and Lyallpur colleges.

The President: "I think that it may be well to make clear at once that in framing this particular question I did not propose that we should dogmatise in the case of all provinces that they should adopt a uniform system of necessity, and it seems to me quite competent to us to leave the question of whether there

should be a separate self-contained 2-years' course in any one province, or whether the province would prefer to have a combined course as at Coimbatore, entirely for local Governments, contenting ourselves with indicating that the arrangements desired or suggested are that there should be a 2-years' course and that there should be a degree course and that the 2-years' course should be so framed, if possible, as to satisfy the local Governments that it did give a training leading to competency. I want to make that clear, because I think there may be value in diversity of practice and I am quite certain of this, that, supposing one province elected to have a self-contained 2-years' course and another one elected to have a combined course, experience would in a very short time show which province got the best men and the other province would follow suit. I want to suggest that I do not think it is essential to dogmatise over the particular point, upon which the Board of Agriculture gave advice which was followed at Coimbatore and other places, but that we might perhaps come to frame our answer to this second question so as to make it quite clear that what we want to get at is that agricultural colleges should aim at a dual course, either one combined, cut in two, or two separate courses, designed to get teachers of the calibre required. Does it seem possible that we could frame an answer to this on those lines, which would satisfy the requirements of the different provinces?

"Now I should rather like to ask Mr. MacKenna, who has seen all the colleges, to give us his impressions of the results of the varying systems in the various colleges in regard especially to the shorter course."

Mr. MacKenna: "Well, I think, I am right in saying that the Coimbatore scheme, which was put before the members of the Board in 1913, was primarily passed with a view to avoiding multiplication of courses. As Mr. Sly has pointed out, a 2-years' course has been adopted at Coimbatore as it has been at Sabour and in the Punjab, with a view (1) to qualifying for subordinates for the Agricultural Department, and (2) to provide a practical course, so far as possible, for sons of cultivators,

while, at the same time, enabling the best boys to proceed to the completion of the 4-years' course. The difference between Mr. Wood and Mr. Leake simply amounts to a difference in the technique of science education. That is to say, one school considers that all abstract science should be taught before you superimpose the applied science of agriculture, while Mr. Wood and some others of us think that it is possible, without affecting the complete scientific training ultimately given, to give the first two years of your course in such a way that it has a much more practical application. Apparently the University of the Punjao agrees with that view of the technique of scientific training. We have not yet had full experience of the 4-years' course. It is in its fourth year now. I am not in a position to say whether the expectations of the framers of that course will be justified or not, but I think that, in this particular reference, we would not go very far wrong if we did not divide up the teachers required for our middle and our high schools. I should have no hesitation in providing both classes of school with the same class of teachers, on the principle that the lower the grade of school the better the class of teacher required."

Several members, however, pointed out the serious financial objections to this last suggestion. It was admitted that the teaching of lower classes was not less difficult than that of higher, indeed experienced educationalists sometimes advocated placing the junior classes in charge of the best men. But as Rai Bahadur Ganga Ram pointed out it would be difficult to get students of the right stamp to take up the profession of agricultural teacher on the prospects open to teachers in middle schools, if four years' training were required. Would it be possible to make the standard of entry for these candidate teachers the F. Sc. and then give them two years' training with prospects beginning at Rs. 60 ?

The Hon'ble Mr. Basu was afraid that if the conditions of entry and length of course were made too difficult they would act as deterrents to the class of students that it was required to

attract. If the entry be of too high a standard, the land-owning classes will be kept out. The proposals before the Conference opened a new career to certain classes and it was most desirable that they should be kept as elastic as possible. He would like to have the 2-years' course complete in itself and then a supplementary course of two years more. The way in which the products of these two courses should be employed might be left to local Governments. Those that do not find the prospects open to them, after completing the 2-years' course, sufficiently attractive, should be able to go on for a further two years to qualify for better posts.

The Hon'ble Sir P. Pattani said that he saw no reason why the middle agricultural school teachers should ultimately be trained in the agricultural colleges at all. No doubt at present it was unavoidable, but once the high schools were efficient he would use them to train teachers for the lower schools. The high school teachers should be full-fledged graduates of the agricultural colleges.

Mr. Sly enquired again whether it was suggested that all the teachers in these agricultural schools should have had an agricultural training or only some of them.

The President thought that it would be sufficient if the headmaster and one or more assistant masters were so trained. Mr. Sly thought the agricultural colleges could do this work and were the best medium for it, but it was clear that the methods required would differ in different provinces.

Mr. Clouston agreed and stated that 25 per cent. of the Magpur Agricultural College students were not matriculates. There was no time in the 2-years' course to teach these men much science but the courses could be altered to meet the case, either by keeping the teachers' class on for a third year or, preferably, by having an entirely separate course. He would not limit the entry to matriculates but take the sons of farmers and land-owners, men who have perhaps studied up to the 6th standard.

After some further discussion the President said that it was clear that conditions differed so widely in different provinces that considerable latitude should be left to local Governments to devise the best means of securing competent men as teachers for the two types of agricultural schools under consideration.

The following resolution, proposed by the Hon'ble Mr. Mant. was then put to the meeting and carried unanimously :—

Resolutions 2.

The Conference consider that the question whether two-years' courses can be combined with four-years' courses at agricultural colleges should be left to local Governments to work out in the light of further experience. Uniformity in this matter is not essential. For the high schools the full college courses should provide suitable teachers. For the teachers of the middle classes it may be necessary in some cases to modify the existing two-years' course so as to give a better education in science, to be supplemented by a course in pedagogy. This development also should be worked out by local Governments to suit local conditions.

The Conference then adjourned until the following day.

2nd Day.

The second meeting was held on Tuesday the 19th June 1917, all the members being present.

The Conference proceeded to the consideration of the third reference :—

(3) "Bearing in mind the importance of imparting a training in teaching to all those who are charged with instruction in schools of whatever character, is it desirable to require that those who attain to the standards that may be determined on as necessary, under the foregoing paragraph, should, before being recognized as qualified for the agricultural educational service, undergo a period of training in pedagogy."

The President pointed out that Resolution II, passed the previous day, practically answered the question so far as it applied to those who would undergo the 2-years' course of training but an answer was also required for those who go through the full four years.

The Hon'ble Mr. Sharp said that no doubt a training of the kind was necessary. It need not perhaps be so elaborate in the case of those who had completed the 4-years' course as with the junior men. Furthermore it should not be interpreted in too broad a sense, as what was required was rather skill in teaching the subject, than a full training in the science of pedagogy. The aim should be to place the student in the environment in which he will hereafter have to teach. There should be a certain amount of instruction in the principles underlying teaching generally, considerably more in methods of organising and controlling a school, and a very complete course in the technique of instruction in agricultural subjects, laying special emphasis on the practical work. A middle agricultural school should be located at or near the agricultural college or institution, so that those taking the teaching courses could observe the application by trained men of the principles and methods they were being taught. The Hon'ble Mr. Basu agreed but thought that the period of training in teaching required should be less in the case of agricultural teachers than in those intended for ordinary schools.

Even in the ordinary high schools of the Education Department, Mr. Waddington stated it had not been found possible to make pedagogic training a *sine qua non* for graduates. It was no doubt desirable but not always practicable. He would, however, make it obligatory for the teachers in middle schools who have only taken the 2-years' course.

Dr. Mann, after an experience of seven or eight years, was convinced that such a training was absolutely necessary even for graduates. He did not want a special school or college for the purpose, but would give at least six months' training at the agricultural school itself. When agricultural schools were first started in Bombay, the best graduate of the agricultural college available for the

purpose was appointed the first headmaster. He was very carefully supervised and every assistance given him in establishing the school at Loni. After he had two or three years' experience subsequent masters were sent to him for training, and the other schools that had since been opened were staffed with these men. The most difficult problem had been to get the masters, whether senior or junior, to take part in the field work with the boys, and this problem had not been entirely solved. It was found that in six months a good man was competent to take up a teaching post.

There being very general agreement with the above opinions, the following resolution was put and carried unanimously :—

Resolution III.

Bearing inmind the importance of imparting a training in teaching to all those who are charged with instruction in schools of whatever character, it is desirable to require that those who attain to the standards that may be determined on as neces sary, under the foregoing Resolution, should, before being recognised asqualified to teach in agricultural schools, undergo a period of training in pedagogy.

The next reference :—

(4) " If so, how can this most suitably be arranged for ? " was then considered, Dr. Mann giving a more detailed accouns of the policy followed in Bombay in founding agricultural schools. It was early decided that the schools should not be in any way connected with the agricultural college and should be located in rural areas so as to be isolated from both collegiate and urban influences. As far as possible the actual conditions prevailing on a substantial farm were aimed at. When the first school wasestablished, Dr. Mann and the head master worked very closely together for the first two years. Then other masters were sent to train at this school. These were required to work in the fields with the boys. In addition, the

subjects not essential to agriculture are taught by a master borrowed from the Education Department. He was opposed to sending the masters for training to the normal training colleges of the Education Department, as the tendency of the class who frequented these was to despise and even be antagonistic to agriculture. He would also oppose having the training associated with the agricultural college, as he thought the college would spoil the school and the school would spoil the college. He wanted the boys at the school to feel that it was not only a duty but an honour to work in the fields. If the boys are with the college students they will feel that they are kept too much on the land. On the other hand the college students would be likely to look down on the boys doing the school course, and that would be unfortunate. He would prefer masters, as soon as possible, to accustom themselves to the different environment of the agricultural schools. In the latter the boys were farmers' sons learning farming, and not students aiming at a University career as at the college."

Mr. Wood was in general agreement, but thought that a short period at a normal training college might help, and Mr. Martin Leake thought this might be left an open question at present. As the Hon'ble Mr. Townsend pointed out, agriculture is by no means universally despised in India but in some provinces, as the Punjab, is regarded as a most honourable calling. Hence the objection taken by Dr. Mann to the normal colleges is not of general application, though undoubtedly valid in some areas. Nevertheless the Hon'ble Mr. Sharp remarked that one could not get away from the fact that the men at the normal schools and training colleges are not often the sons of agriculturists, but belong to the more professional classes, and the atmosphere tend to be adverse to callings, such as agriculture, involving manual labour. Mr. Higginbottom hoped that public opinion was changing in this respect and thought we should look in advance of present conditions and aim at a scheme that might be

reasonably permanent. He was personally strongly in favour of having the training of agricultural teachers carried out at the agricultural colleges. He believed that all the students would gain by having teaching classes in their midst and by getting some knowledge of the working of an agricultural school. This view found little support and the discussion centered on the type of school required for training agricultural school teachers outside the agricultural colleges.

Mr. Clouston thought it was the function of the normal training colleges to undertake work of this kind. Pedagogy is as much a science as agriculture and just as the agricultural colleges provide for the agricultural training so the normal colleges should provide for the training in teaching. The agricultural school teacher should spend at least three months at a normal college and then complete his training by working under an experienced master at an agricultural school for a year.

Mr. Sly did not think that the normal school atmosphere was suitable for the training of agricultural teachers and believed a better system would be to attach a trained instructor in pedagogy to the agricultural school selected for the training of the teachers.

Sir Gangadhar Chitnavis would meet the difficulty by creating a separate normal school for agricultural teachers in each province. At such schools all sorts of agricultural education which would be required for Anglo-vernacular and vernacular schools in all its phases would be given. These normal schools would also qualify students for the teaching of agriculture to common cultivators at the several demonstration farms and in many instances in their own villages. Mr. Sly said that that would no doubt come in time, when there was a sufficient demand for these teachers, but it could hardly be realised in the near future. Dr. Mann agreed and thought that a special training or normal school for agricultural teachers would be required when there were, say, 50 agricultural schools in the province. But meanwhile the training would best be done at an

ordinary agricultural school specially selected and staffed for the purpose—one in each language area would be required. The Hon'ble Raja Sir Rampal Singh suggested that some of the normal schools might have an agricultural side, until the time came for complete normal agricultural schools.

An alternative scheme was suggested by the Hon'ble Mr. Basu, who believed that the best results would be got by taking trained teachers from the normal training schools and putting them through a course in the art of practical agricultural teaching under a trained instructor at an agricultural school afterwards. With regard to the objections raised by some members to the development in the normal schools of an aversion to agriculture, he thought that the feeling of repugnance on the part of the educated classes to manual labour, on the ground of its want of dignity, was fast disappearing. He gave several illustrations to prove this.

After hearing the discussion, the Hon'ble Mr. Sharp expressed himself in favour of sending the agricultural teachers for training to an agricultural institution of some kind, whether attached to the agricultural colleges or a special school like that at Loni. Here one could ensure that they received efficient practical instruction and had real agricultural classes to deal with. The headmaster would be a B.Ag or the equivalent, with a training in pedagogy, and the success of the scheme would largely depend on him. He was not persuaded that it would be desirable to train the agricultural teacher in either of the two main types of existing training institutions, the college for the training of secondary teachers and the normal school for the training of vernacular—generally primary—teachers, under the Education Department.

Rai Bahadur Ganga Ram suggested that some distinctive degree or diploma, similar to the B. T. of the Punjab, should be given to agricultural teachers who had passed through their course of training successfully. He urged this chiefly in order to assist them to get employment in Native State or private agri-

cultural institutions. This proposal commended itself to the Confrence.

The following resolution was then put and passed unanimously :—

Resolution IV.

The Conference accept the view which was urged by all the heads of Government Agricultural Colleges present, that it is undesirable to attach training schools in pedagogy to the Colleges.

The Conference consider that the most suitable means at present of giving training in teaching methods for teachers of agriculture in agricultural schools, would be to require candidates under the last Resolution to undergo a course in a specially selected agricultural school to which should be attached an instructor fully trained in pedagogy. For this purpose each province contemplating the establishment of agricultural schools, which has not already done so, would have to establish an agricultural school suitable for such training purposes—preferably one in each language area. When the number of agricultural schools, and consequently the demand for qualified teachers, multiplies sufficiently it would be desirable to establish a special training institution for teachers in agriculture which would remain attached to an ordinary agricultural school.

The Conference then passed to the consideration of the next reference :—

> (5) " Is it desirable to lay down, as the ultimate goal, the establishment in each district of one agricultural school of the status of a high school and of one or more agricultural schools of the status of middle, or Anglo-vernacular, schools leading up to the high school ? "

The President explained that it was not suggested in any way to do more than indicate a policy of evolution, based to some

extent on the experience of other countries, which might gradually be worked up to. Local Governments would n ot be asked to do more than use the discussion and resolutions on this reference as a guide in framing their future policy.

The Hon'ble Mr. Sharp said that his past experience of attempts at teaching agriculture in secondary schools in India had not been happy. Grants had been made to some schools in Bengal for the development of an agricultural side, but they had either not been expended or had been frittered away uselessly. But he had seen a promising attempt at the high school attached to the Khalsa College, Amritsar. There are three types of agricultural schools that may be considered, the primary, middle, and high schools. Of these the last is perhaps the type for which the country is as yet least prepared, while the middle schools are the most important. For the latter he would not restrict the teaching either to the vernacular or to English. The schools attached to farms would probably be mainly vernacular but there was an advantage in having optional English classes in them.

Mr. Wood was not prepared to assent to the proposal to start such schools in Madras, as the Agricultural Department was so short-handed that any extension of its activities in this direction would necessarily be at the expense of more important demonstrational work. There are not enough men turned out at the Coimbatore College to meet the present needs of the Department, much less to supply teachers for agricultural schools. Even at a later time he would prefer to attack the problem of agricultural education at the primary stage and develop that agricultural tinge in primary school education which was advocated at previous conferences.

A prolonged discussion then took place on the status of the proposed agricultural high schools. Mr. Waddington said that they seemed to him to be something like an alternative road to the University. For the present, at least, he would prefer to concentrate on middle vernacular schools, somewhat of the type of those started in Bombay. The high schools also did not commend themselves to Dr. Mann, who doubted whether the students could

follow a high school standard of general education, particularly in English, and still have time to specialise in agriculture. A purely vernacular agricultural school for farmers' sons was his ideal at present. Sir P. Pattani and the Hon'ble Raja Sir Rampal Singh agreed. The President argued that it must surely be an advantage to be able to draw on these high schools for entrants to the agricultural colleges. No doubt they would lead some of the students to proceed to a University course, but that was not undesirable and they would join the college better fitted than the present students to profit by the teaching. That there was a strong demand for agricultural teaching in existing high schools was emphasised by the Hon'ble Mr. Townsend and all agreed that it would be lamentable to discourage this. By grafting agricultural education on to existing high schools this demand can be met, and several members preferred this course to the foundation of special agricultural high schools.

The Hon'ble Mr. Townsend would follow the same course in regard to existing middle schools, both vernacular and English, and Mr. Higginbottom thought the suggestion a good one as it would broaden the basis of agricultural education and enlarge the scope of the activities of the agricultural department. He also agreed with the President that it was eminently desirable that the brightest boys in the middle vernacular agricultural schools should be able to proceed to the University through the medium of an agricultural high school. The time required in reaching the high school standard, especially in English, would not be found excessive. The Hon'ble Mr. Basu corroborated this last opinion, but even granting it, Dr. Mann pointed out that two or three of the most valuable years of the students' life would be devoted to acquiring an English education. Of course there was nothing to prevent a particularly brilliant boy specialising in English and going on ultimately to the Agricultural College, but up to that point he could not also specialise in agriculture. He wanted his boys to return to their farms. The Hon'ble Mr. Sharp thought that a boy who had received a thoroughly good vernacular education in a middle vernacular school, or in an agri-

cultural school of the same standard such as that at Loni, would quickly pick up English, and in three or four years would reach the matriculation or school-leaving certificate stage. But, as several members pointed out, he would have little time for specialised agricultural study during this period and could just as well go through an ordinary high school of the Education Department. Mr. Martin Leake said that the proposed agricultural high schools made a second line of approach to the University and one that, in his opinion, was not called for. It would be impossible to combine the English required with agriculture. If a boy is going on to the University he should go through a thorough English course first and learn the agriculture afterwards. For the new school-leaving certificate the Allahabad University had cut out Agriculture and substituted Agricultural Botany, which did not include practical work in agriculture and was chiefly botany. That was as much as was found practicable. He would prefer the boys at the agricultural schools to finish at the middle vernacular stage.

With regard to the middle agricultural schools, there was more unanimity. There was some discussion as to the age at which the boys should enter these schools. Dr. Mann said that in Bombay they entered between 14 and 17 years, an age which some members thought rather too high. They had usually passed the 4th or 5th primary vernacular standard when admitted. They remain two years, during which period they go through the middle vernacular standards. Tuition and board fees were covered by scholarships. Mr. Clouston described the middle vernacular schools that were to be started in the Central Provinces in connection with some of the experimental farms. They were to be vernacular schools with a two years' course. The curriculum would be a modified form of the middle vernacular curriculum, with more attention paid to subjects like nature-study, book-keeping and accounts, and the like, than in the latter. The aim would be to provide a good liberal education, and over much stress would not be laid on purely agricultural subjects. The boys would be required to take an interest in the

practice of improved agriculture as followed on the farm, and a general information Reader on rural life would be prepared for their use. The school was to be staffed by the Education Department and there would be two hours of practical work daily carried out by the farm staff. The boys would belong to agricultural classes, sons of Malguzars and leading cultivators. They would be admitted most likely after passing the upper primary (5th and 6th) standards, which meant that they would be 13 to 15 years of age. Fees were to be taken for board and tuition. He would prefer to wait until he had had some years' experience of the working of these schools before deciding whether agricultural high schools are required.

Sir Gangadhar Chitnavis did not agree with those who held that vernacular schools would be sufficient. In some places they were not even necessary. He would have a middle Anglo-vernacular or pure vernacular agricultural school in each district and three or four demonstration farms in each tahsil and a high school for agriculture in each division.

Mr. Sly said that it was clear that two alternative policies presented themselves: the development of an agricultural side in existing schools; and the provision of special secondary agricultural schools. The experience in some other countries, especially in Ireland where conditions in some respects were not unlike India, was in favour of the first of these policies, which was at once more economical and covered a wider field. In Prussia also the special agricultural schools were not a success and recently had been largely replaced by winter classes. In these, little attention was paid to practical agricultural training; the students were rather taught the scientific and theoretical principles underlying agricultural practice, the practice being learnt by the boys in their own homes.

Then there was the question, supposing special agricultural schools are started, of what type should they be? Should they be technical schools or should they give a general education with special attention devoted to agriculture. He preferred the latter. With the answer to this question is bound up to some

extent the decision as to who should control the schools—the Education or the Agricultural Department. If the schools are to be technical schools, probably the Agricultural Department would be the best agency, but not otherwise.

It would be advisable to locate the schools on or near a Government farm. The general education should be, he thought, controlled by the Education Department, but one or, at the most, two members of the staff should be graduates of the agricultural college with a special training in pedagogy. Boarding schools would be better than day schools.

Then there was room in certain parts of the Central Provinces for schools of the vernacular type, where some general education was combined with a special training in agriculture. Something better than these was also required to meet the needs of the sons of landlords and land agents. A vernacular school would not do for these, but one which gave a good general education, partly in English, combined with some teaching in agriculture, was required.

Mr. MacKenna would prefer to add an agricultural side to existing schools. In any case the first requisite appeared to be a good general elementary education. If specialisation be attempted it should be after this, as in Japan, where the first six years were given to a general vernacular education, after which the boy might take up agriculture or commerce or other technical subjects.

The Hon'ble Mr. Basu believed in demonstration as the best means of impro ving the agriculture of the country. Where schools were started they should be in rural districts, at or near a demonstration farm, and the instruction should be in the vernacular. For boys of the Malguzar class separate arrangements might be made in the high schools or elsewhere, but he was thinking of the actual cultivator.

The President interpreted the sense of the meeting to be that middle agricultural schools were desirable and that whether

they were controlled by the Agricultural or Education Departments, they should be located at or near agricultural farms. There was clearly a good deal of doubt regarding special agricultural high schools, and even opposition to them. These views were incorporated in the following resolution, which was accepted by the Conference:

Resolution V. The Conference are of the opinion that it should be laid down as a goal that every rural district should have one or more agricultural middle schools usually situated near to demonstration or experimental farms.

They are divided on the question whether the establishment of agricultural high schools is in the same sense desirable, since it is arguable that the boy who is going on for a University course, even in agriculture, will be better qualified by going as far as the matriculation through the ordinary high school of the Education Department. It is not considered desirable to pronounce definitely until experience has been gained of the results of establishing agricultural middle schools.

Mr. Wood wishes to qualify acceptance, so far as regards Madras, by expressing his view that for that province concentration on demonstration is more desirable than the establishment of schools.

The Conference then adjourned until the following day.

Third day.

The Conference re-assembled on Wednesday the 20th June, 1917, the Hon'ble Mr. Mant presiding.

The Chairman read a letter from the President regretting his absence on account of illness.

Before proceeding to the business of the meeting, Mr. MacKenna said :—

" It was the intention of Sir Claude Hill, had he been present, to express the sense of loss which all interested in the agricultural development of India feel at the untimely death of Mr. J. H. Barnes, Imperial Agricultural Chemist. In Sir Claude's absence this sad duty devolves on me.

" Mr. Barnes was an officer of high scientific attainments and of great strength of character, who was universally esteemed throughout the Department.

" His death at the early age of 38 is a serious loss not only to the Imperial Agricultural Department but to the agricultural interests of India in general."

The Chairman proposed a vote of condolence with Mrs. Barnes, which was passed in silence and standing.

The Conference then proceeded to the consideration of reference 6 :—

(6) Is it desirable at this stage to consider the type of such schools, or should this be left to the consideration of local Governments ?"

Mr. MacKenna thought that it might be as well, in the present stage of development of educational policy, to leave the working out of details to local Governments. It was already clear that uniformity of type was not contemplated in the different provinces. No doubt it would be possible for him and the Hon'ble Mr. Sharp to work out a skeleton scheme and submit it to the criticisms of local Governments, but he thought, and the Hon'ble Mr. Sharp agreed, that it would be preferable to ask local Governments to submit in outline their proposals, and examine these.

The class of student to be taken in the agricultural schools will depend, as the Chairman remarked in reply to enquiries from Mr .Waddington and Mr. Wood, on the decisions ultimately come to on this reference in regard to the type of school found practicable. Mr. Clouston went further and said that the questions dealt

with in several of the earlier references in regard to teachers would also have to be reconsidered by the local Governments, if they are left to fix the type of school. But Dr. Mann thought that it was altogether premature to attempt to fix the type required, as each province would have to experiment for itself for some considerable time to come. In Bombay, where experiment had proceeded further than in most provinces, it was already probable that other models, besides those followed at present, would be required. All that we could do now was to furnish local Governments with the fullest information possible as to the results of experience in India heretofore, with perhaps assistance and guidance on technical points, but leave to them the working out of the details.

Mr. Sly examined the three main types of school teaching in agriculture which had been brought before the Conference: the Bombay type, where instruction in farming was given to cultivators in a school which was predominantly agricultural, though a general elementary education was also provided for; the Central Provinces type, where a vernacular school of the Education Department was to be located at a farm and the farm staff would give the boys a practical training in addition and supplementary to their general education; and the Punjab type, where agricultural classes were to be established in existing schools. It would be useful to local Governments to be kept informed on the working of these types, and, as a first step, he suggested that the Agricultural Adviser should compile a summary giving details of the types that at present exist.

The hesitation expressed by Mr. Wood, at the previous day's meeting, in accepting responsibility for developing agricultural schools to the detriment of what he considered the more important demonstrational activities of the department, was shared by Mr. Clouston, who thought the economic development of the Central Provinces had not yet reached the stage when there was any considerable demand for agricultural schools. Economic development, in so far as agriculture was concerned, could best be promoted at the present stage by the demonstration of

improved agricultural practices, improved seed and the like, and he had not a sufficient number of trained agricultural students coming on to spare any for the schools. Perhaps in nine or ten years they could take up this form of activity without suffering in other directions. The schools he proposed at present would be staffed by the Education Department and would not be any drain on the agricultural men.

The Hon'ble Mr. Townsend would like to see, in any resolution passed on this reference, the necessity for practical work emphasised. He would lay it down as an axiom that no agricultural school should be started unless provision could be made for practical instruction. Some of the schools might be located near farms but all should have their own piece of ground for the purpose.

Mr. Sly again drew attention to the experience in other countries that attempts to teach practical agriculture in special agricultural schools had largely failed, because the cultivators learn their practice very much better at home, but Dr. Mann said that he expected to show them improved methods, things they did not know about already. Unless this could be done, he would agree with Mr. Sly. He personally felt that the boys going out from Loni school, where they learnt improved methods, did more for the agricultural development of the country than a good deal of demonstration.

The following resolution was then passed unanimously :—

Resolution VI.

Having regard to the diversity in the type of schools which has been evolved under the Education Department of different provinces, it is not possible to discuss profitably the precise type of schools required to meet the needs indicated in Resolution V; but having regard to the desirability of securing that early attention be attracted to this subject, the Conference recommend that the Agricultural Adviser should prepare, for the information of local Governments, a memorandum showing what has

already been done or attempted in India in these lines.

The Conference, however, desire to emphasise the importance of practical work in any school which teaches agriculture and of having a plot of land, if not a demonstration or experimental farm, attached to the school.

The next subject taken up was item 7 of the reference :—

(7) " In view of the resolutions which may have been passed at this Conference on the subject of establishing agricultural schools in the various provinces, and of arranging for a staff of trained teachers, is it or is it not desirable to modify Resolution I relating to Agricultural Colleges which was passed at the Pusa Conference and, if so, in what sense ? "

The Hon'ble Mr. Sharp said that there were two distinct though connected questions covered by the discussions at the Pusa Conference in reference to the agricultural colleges :—

(1) whether each province should have its own high-grade college ; and

(2) whether these colleges should be affiliated to the Universities.

He thought it would be better to separate these questions and deal with each of them independently.

In the discussion on the first of these points, it was evident that conditions had somewhat changed since the Pusa Conference, the representatives of the Punjab and the United Provinces being emphatic that there was now a sufficient demand for a high grade agricultural college in each of these provinces. This demand was not felt to the same extent in the other provinces, Bengal, Bihar and Orissa and the Central Provinces. Mr. Clouston said that he was fully satisfied that his Department's college at Nagpur was fulfilling a necessary function in supplying the upper and lower subordinate ranks of the local Department with trained

recruits, but beyond this there was very little demand and at the most he calculated that he could send on a student every year or every other year for higher agricultural courses of a university standard. If these men were sent to a central college of university rank he would hope to utilise them as recruits for half of the posts in the provincial service, but he proposed to recruit the other half of the latter from the upper subordinates who had been through the Nagpur College. Eventually he hoped to raise his college to university rank. Mr. Sethi said that the Sabour College, which was intended to meet the needs of Bengal, Bihar and Orissa and Assam, attracted very few students and these not of a very satisfactory type. It would be premature to raise Sabour to a University College standard, though that might come later on.

Mr. Sly said that his personal views were that an agricultural staff for the upper subordinate and provincial services must be trained under the local conditions of the province in which they were to serve, if they were to receive an all-round agricultural education. Only those who proposed to specialise in subjects like agricultural chemistry and botany could be sent to a central institution. If it were proposed to select a single college in Northern India for higher collegiate instruction, this college would either be a provincial college, primarily serving the interests of a particular province, or else a central institution divorced from provincial control, a purely educational institution, and out of contact with the interests of the agricultural department. Both these types seemed to him to be radically bad. No one college could serve the needs of the several provinces. The Central Provinces students might be required to go to Lyallpur, whereas the only outside college that at all approximated to Central Provinces conditions was that at Poona: what value, too, would a Lyallpur training be to a Bengal student? Hence, he was strongly in favour of each province doing its best with its own provincial college and raising it to the standard it required, and he felt sure that if the Pusa Resolution I were allowed to stand, and some of the provincial colleges were scrapped, they would have to be

restored later on. The dearth of students would not be permanent; as the departments had more to give and more to teach, arising out of the research and experimental work they were carrying on, students would come, not only for Government service but also from the land-owning classes who desired to improve their land. He did not think that this last class would be prepared to go to another province where conditions were necessarily different. With these views the Hon'ble Mr. Basu expressed himself in full agreement, stating that even Sabour, which when founded was within Bengal, did not, now that it was cut off with the new Province of Bihar, commend itself to the people of his province. He pressed for a separate institution in Bengal to which perhaps Assam boys might come.

The following resolution proposed by Mr. MacKenna was then put and passed unanimously :—

Resolution VII.

In view of the Resolutions which have been passed at this Conference, and of the changing conditions as affecting the expansion of provincial departments of agriculture, the Conference consider that Resolution I relating to Agricultural Colleges which was passed at the Pusa Conference should be modified and that local Governments should be left to work out their collegiate courses with reference to local conditions. They consider that each of the principal provinces of India should have its own agricultural college so soon as the agricultural development of the province justifies that step.

A prolonged discussion then took place on the question of affiliating the provincial agricultural colleges to the universities.

The Hon'ble Mr. Basu made a powerful plea in favour of affiliation. He said that it should be steadily kept in mind that the universities, whether the present system be good or bad, had taken a strong hold on the minds of the people of India.

Their prestige and influence were very great and the whole status of agricultural education would be raised to a higher plane in the view of the people if associated with the university. The influence of the university would be reflected in an affiliated college and the funds of the university would be at its disposal for progressive improvement.

Mr. Sly said that he had heard many arguments in favour of affiliation and many against. Amongst the former, it was said that affiliation improves the standard of teaching, but he was not satisfied that this was necessarily the case. He enquired if it had been found at Poona that the affiliation of the agricultural college there to the Bombay University had been effective in raising the standard of teaching and Dr. Mann replied that it had, in so far as that it had resulted in giving them a better class of student to deal with. Mr. Sly remarked that such had not been the experience in the four higher engineering colleges in India. He had recently had occasion to examine the conditions in these colleges and he found that what was by common consent the best of them and the one that got the best students—the Roorkee College—was not affiliated. The practical inference seemed to be that it was the actual prospects open to students rather than the value of a degree, that attracted good men. It was true that the Roorkee College now wished to become affiliated, but the other three affiliated colleges found that the connection with a university had its disadvantages as well as its advantages. Then it was said that affiliation was beneficial in that it brought the college into closer touch with educational activities generally, but that only held good of colleges in large educational centres. Most of the agricultural colleges were not so situated. Against affiliation it was urged that there was a danger of university interference in directions opposed to the interests which the college was intended to serve. It was necessary to create a faculty of agriculture when affiliation took place and on this faculty pure science was likely to be strongly represented. He doubted whether there were, in any province, sufficient men of agricultural attainments to form a satisfactory faculty. The tendency might be to emphasise the

scientific at the expense of the practical training, as the university atmosphere did not always help towards a due appreciation of the value of practical training. In the engineering colleges there had been complaints that the standard in pure science required by the university was higher than was necessary for an engineer and that practical training was neglected. In fact, the Madras University was the only one which required from its engineering students satisfactory evidence of practical work—the others gave the degree on purely theoretical courses. Again, it was stated that affiliation led to delay in effecting necessary alterations in the curriculum of the colleges, whereas education in agriculture and engineering was in a very fluid state and alterations had to be made to keep abreast of the times. It had taken four years to carry through some alterations in the engineering curriculum and this had been adversely commented on. Hence he thought the whole question deserved further consideration and he would leave local Governments to make up their own minds about it, and also to consider whether if a degree be conferred, it should be by the university or by an independent agricultural institution.

The Hon'ble Mr. Sharp was able from his experience to confirm some of the objections raised to affiliation, though there was an undoubted *cachet* attached to a degree in India. He would regard affiliation with caution. The liberalising influence of university education will depend on the degree of contact between the college and the university and as the agricultural colleges are mostly away from university centres, contact will hardly be close. No doubt the present tendency to increase the number of universities may remedy this. Still the agricultural college will always be a specialised institution and the university will naturally look primarily to the interests of the more strongly represented courses of study. There were, for instance, 62 Arts colleges of university grade attached to the Calcutta University. In Europe the tendency was rather to separate these specialised institutions from university control and the alternative might well be considered of the agricultural college giving it own

degrees. For this it would be essential to provide a thoroughly good staff and to keep the college at a high standard of efficiency. There had recently been appointed a Commission to enquire into one of the Indian universities, and as this was one of the aspects likely to be examined into, he would suggest that no strong expression of opinion be given before the conclusions of that Commission were available.

Dr. Mann said that he would look at the question in the light of his own experience at the Poona college, rather than from a general point of view. They had gained by affiliation. Not only did they get better students but their staff had been given a higher tone by being on terms of equality with the university professors. The experience in engineering colleges did not apply, as in that branch the demand for trained men is greater than the supply and they could pick and choose their students from a large entry. In agriculture the demand is not yet great and students must be attracted. He had not experienced the disadvantages of affiliation mentioned by previous speakers. For instance there was no danger in Bombay of undue representation of pure science interests in the agricultural college, as the college curriculum was controlled by a Board of Studies in the Faculty of Science, and that Board consisted of the departmental college staff with a very small outside element. When they wanted to alter their courses, they got the alterations through in about two years. Small changes could be made in about six months and really big ones in about two years. In this matter it was well to have a check on hasty action and he thought the delay was not without its advantages. The standard of attainment required by the university even in pure science was one that had largely been fixed by the college staff and he had found the university always ready to accept their recommendations. Full recognition was given by the university to practical work; each candidate was required to cultivate a small plot of land for two years and after that must manage a plot of one acre for another year. Certificates signed by the

Principal of the college that this had been satisfactorily done, were required and also the practical note-books, attested by the Principal, must be presented to the examiners. There was also no difficulty whatever in having courses in the college of other than university standard and outside university control ; such courses had been established at Poona. But he wished to emphasise that if the college were to be a success, it must be regarded essentially as a teaching institution, staffed with enthusiasts in teaching, and that if regarded primarily as a research institution with teaching in a secondary place, it could not hope to succeed as a University College. It was important also that the Principal should lay himself out to exercise an influence in the university.

The Hon'ble Mr. Basu corroborated Dr. Mann's experience from his knowledge of the working of the Calcutta University. There was never any objection on the part of the university to professional or industrial institutions following their own courses. Both the Medical and Engineering Faculties consisted of the staffs of the respective colleges, with outside practitioners of reputation, and he had never known the Senate to disregard the recommendations of these Faculties in questions with which they were competent to deal. Practical work is fully recognised in these Faculties, but, at the same time, he urged the extreme importance of a strong representation of pure science in technical institutions. He thought the trend of opinion was very definitely in this direction, especially since the war had brought into prominence the supreme importance of abstract science in industries no less than in warfare. He instanced the dyeing industry and quoted the well known case of indigo.

The Hon'ble Sir P. Pattani also argued in favour of affiliation, and both Mr. Clouston and Mr. Martin Leake thought that affiliation was bound to come, the only question being when should it be brought about.

Mr. Clouston further pointed out that for some time to come all the men turned out by the Nagpur College (and he understood

also by the Coimbatore College) would be required by the Department and the latter did not necessarily want graduates.

Mr. Higginbottom was altogether in favour of affiliation, as he thought it would help agricultural progress and by getting outside the departmental limits, broaden the whole basis of agricultural work. The degree is a challenge to an ambitious student and helps to open up a career to all. Furthermore he wanted to attract the zamindars and land-owning classes and he thought a university college leading to a degree the best way of accomplishing this.

The Hon'ble Mr. Townsend had not met with the difficulties suggested by some members, in the negotiations with the Punjab University regarding the affiliation of Lyallpur College. The university had met them half way and where they had criticisms to offer, these had been made in a most friendly spirit and had commended themselves to the college staff. He thought the case would be met if the advantages of affiliation in the case of the Poona College, the only one which had experience behind it, were brought to the notice of local Governments and the latter could then decide for themselves.

Sir G. Chitnavis and some other members thought that while affiliation should be the rule and non-affiliation the exception, this step could not be definitely recommended to local Governments for immediate adoption.

A prolonged attempt was made to find a formula acceptable to the whole body of the Conference, and this having failed, Dr. Mann proposed the following resolution :—

"In so far as the colleges are intended to give the highest agricultural training possible, suited to the conditions of India, the Conference is of opinion that they should be affiliated to the universities. In so far as they are intended to serve purely or principally departmental interests, there is not the same need for this, but the Conference is of opinion that there is opening for a college of the former type in most of the provinces.

The two purposes can be easily combined in one college."

Mr. Sly proposed the following as an amendment, which was put to the meeting and carried by 9 votes to 6.

Resolution VIII. **The Conference recommend that the question of affiliation of agricultural colleges should be left to the decision of local Governments in accordance with local conditions.**

The next reference :—

(8) "Should candidates for the lower grades of the agricultural service be educated at these colleges or at separate agricultural schools" ?

did not detain the Conference long, and after a brief discussion the following resolution, proposed by Mr. MacKenna, was passed unanimously :—

Resolution IX. **While desiring to emphasise the principle that the agricultural middle schools contemplated in Resolution V should aim at training boys who will return to the land, there would be no objection to recruiting boys from these schools, if suitable, for the subordinate posts in the Agricultural Department.**

The Conference then passed to the consideration of item 9 of the reference :—

(9) "Should the text-books of primary schools be adapted to the agricultural environment of the pupils?"

The Hon'ble Mr. Sharp thought that this is now recognised everywhere as an accepted principle, whether the methods of giving effect to it be satisfactory or not. In practically all rural schools, text-books or primers with some agricultural bias are provided, though he could not say that they were not often unsuitable. Attention is also paid usually to nature-study, or to general knowledge of matters of rural interest.

Dr. Mann severely criticised the attitude of the Education Department towards this subject. That department was essentially

a city department and was uninterested in rural matter and quite unable to prepare suitable text-books for rural schools. He gave instances where books prepared by the Agricultural Department with a rural bias were refused by the Education Department, as in the case of an Arithmetic with problems suitable for farmers, which he had been instrumental in bringing out.

Mr. MacKenna said that in Burma the Agricultural Department had co-operated with the Education Department in revising the text-books or Readers for rural schools. He and one of his staff had been appointed to a committee for the purpose. Mr. Clouston said that the same was proposed in the Central Provinces, where it had been decided to bring out a well illustrated and carefully prepared text-book. Mr. Wood thought that this was a matter which had not received the attention it deserved. He believed that it was of the first importance to have a properly illustrated text-book, on which no pains should be spared and expense should be no consideration. The book could be sold under cost price and the money would be well laid out.

Not only the Readers but also, as the Hon'ble Mr. Sharp pointed out, the syllabi in rural schools were in need of revision. The Hon'ble Mr. Basu hoped that in carrying this out the need for variety and for general information on other than rural matters would not be neglected, but the Hon'ble Mr. Sharp said that there was no danger of this, as in all Readers, fables, stories, and general knowledge of a varied kind were included.

Mr. Sly thought that there was now an opportunity for discussing the relation of rural primary education to the needs of the agricultural classes. He would like to take up the subject on a much broader basis than had been done so far. Only one side of the question had been touched on, namely, the revision of the text-books, though he fully agreed that the latter require the best efforts of all concerned to bring them up to a satisfactory standard. He would like a discussion on the staff of the rural schools, both teaching and inspecting, on the methods of conducting nature-study and of bringing rural

interests before the boys, and on school gardens and how to run them. He said that the schoolmasters in primary schools in the Central Provinces are mostly townsmen and thought that the Education Department could do something more to recruit agriculturists for the staffs of rural schools; and the same applied to the Deputy Inspectors and Inspectors of Schools, who were mostly out of touch with the country-side. He would like to see Inspectors with other than literary traditions and also some with science qualifications. He thought the Conference should, if possible, define some policy which would bring rural primary education more in relation with rural life than is at present the case.

Mr. Higginbottom agreed that these were matters of the greatest importance and thought that we had more light on them than when they were previously considered at Pusa. He would like to understand more clearly what was meant by giving an agricultural tinge to primary schools, as he confessed he had recently had occasion to alter his views considerably as a result of examining the experience of others, both in India and in the Philippine Islands. In the United Provinces it was true that there was a course of nature-study laid down, but he wished to remark that the scheme was too ambitious, that there was not a single teacher qualified to conduct it and that it was not attempted in any school. He did not believe that there was anyone in the normal schools of the province able to train teachers in this subject. The institution with which he was connected had made an attempt to give some training by taking rural teachers for 10 days at a time, in the vacation, but not much could be done in so short a period. He would like to see a development of the plan of having school and home gardens, with well-considered instructions how to run them. At present the rural schools were unpopular with the agriculturists—the parents of the very children we want to reach.

Dr. Mann gave an account of an interesting experiment in progress in Bombay with funds provided by private

benefactors. The farmers in the locality referred to were found indisposed to allow their sons to remain at the ordinary primary schools beyond the 3rd standard, on the ground that they came to regard a farming life with distaste if kept on longer. A scheme was prepared to provide a full primary education of the standard of the Bombay Education Department but the headmaster was an agricultural graduate and the whole instruction was based on the needs and interests of country boys and each boy had a plot of ground which he worked for himself. The term agricultural school had been applied by the donors to these schools, but they were more properly rural schools. It was very difficult to find teachers, though there was a body of gentlemen in the Deccan prepared to found a school for training these rural school teachers altogether on a new plan, once the scheme had been tested and carried through and had been approved by the Education Department. He thought that the essentials to be borne in mind were that the school should have a rural atmosphere quite different from that arising from the environment of town life, that the boys should be brought into direct contact with rural objects wherever possible and that there should be competent teachers.

Mr. Clouston said that little could be done until teachers were available, and for this we must wait on the Education Department. He would have Inspectors of that Department trained in science and methods of teaching and put them on in the normal schools to undertake the training of the teachers, and arrange to send them out on tour with the students, say for a month, to a Government farm, so that the farm staff could then help in the training. In this matter the Education Department must do its own work. It was a question of bringing out the natural faculties of the boys in observation and the like, and he would also have a garden so as to get both the boys and the masters to do thing for themselves, with their own hands.

The Hon'ble Mr. Sharp said he felt very strongly on the whole question under discussion. One of the gravest criticisms

of the Education Department was that in the matter of primary instruction it is divorced from the actual surroundings and needs of the child in rural areas. What they wanted was a little more of what was known in the United States, he believed, as Realistic Education. But two big initial difficulties had to be admitted :–

(1) the boys stay so short a time at school that there is room for little more than the "3 Rs" ;

(2) trained teachers are not available and their training presents serious difficulties. In regard to this, various plans had been tried but they had not given good results.

Mr. Waddington offered the suggestion that, merely as an experiment, the plan might be tried of giving the village schoolmaster a plot of land on whatever conditions the Department might lay down so that he should cultivate it in a certain way. Mr Higginbottom said that this was more or less the system in the Allahabad rural schools founded by Mr. Fremantle: at least, the master who teaches the subject takes any produce; and there was one advantage in it that it offered an inducement to the teacher to devote his attention to that side of nature-study and not merely to take the boys for a country walk whenever he felt inclined. Each boy ought also to have his own plot.

The Hon'ble Mr. Townsend gave extracts from a memorandum by Professor Campbell of the Irish Department of Agriculture, making a distinction, with which he was in agreement, between nature-study proper, and horticultural and agricultural instruction. Nature-study should be of a general character of interest to all boys, reacting beneficially upon the teaching of every subject in the school courses, but not concerned with the teaching of horticulture or agriculture and not intended to be of any direct assistance to the future farmer. Nature-study should not, therefore, be confined to the running of school gardens, which illustrates only one side of the subject. This view found ready acceptance with other members, it being

recognised that the essential thing is that in training the faculties of the boys, rural objects and rural examples should be used in every possible part of the school course.

After some further discussion, in which the Hon'ble Mr. Basu called attention to the danger of detracting from the sanctity with which the teacher is regarded in India if the rural school teachers are recruited from the lower castes of the rural community, the following resolution was put and passed unanimously :—

Resolution X. **The Conference accept the principle that the text-books of primary schools be adapted to the rural environment of the pupils. They consider that, where necessary, the existing text-books should be revised by the Education and Agricultural Departments in consultation, or that special text-books or syllabi should be prepared by them.**

The Conference also strongly insist on the desirability of adapting primary education in rural areas more closely to rural needs. Whilst agreeing that no attempt should be made in primary schools to teach agriculture or horticulture as such, the following suggestions are made towards the solution of this problem :—

(a) **Nature-study should form a necessary part of the curriculum in rural schools.**

(b) **All subjects,—reading, writing and figuring—should be taught in relation to rural life.**

(c) **A garden should be attached to each rural school as an aid to nature-study, though lessons should also be given in the surrounding fields.**

(d) **The teachers of rural schools should be recruited as far as possible from the rural population.**

(e) Special attention should be paid to the training of rural teachers, preferably in a separate training school.

(f) The Agricultural Department should, when opportunity offers, co-operate by vacation courses for such teachers.

(g) The Education Department should endeavour to recruit to the lower inspecting staff a larger proportion of the rural population.

(h) The Education Department should also endeavour to recruit as Inspectors or District Deputy Inspectors a larger proportion of science or agricultural graduates.

The Conference then took up the consideration of the last item of the reference :—

10. "For the illiterate classes should we at present attempt anything beyond demonstration ?"

Mr. MacKenna said :—

"I do not think it is possible to do much more for the illiterate cultivator than to demonstrate improvements to him. Demonstration is a form of our activities to the importance of which His Excellency the Viceroy has on more than one occasion referred and I take this opportunity of saying what an encouragement and stimulus to workers in the Agricultural Department His Excellency's frequent and gracious reference to our work has been.

"There are two methods of demonstration, both of which we apply. In the first place, you may take a man to your demonstration : in the second, you can take the thing you want to demonstrate to the cultivator. On the whole, I incline to the view that the latter method, as practised notably in Madras the Central Provinces and Bengal is the most successful. You don't frighten a man away by a "ringed fence" or by an air of officialdom. The demonstration is done either on his own land

or on the land of a neighbour. There is no artificial atmosphere; no unfamiliar surroundings. A demonstration is just an incident in the village economy. This form of demonstration applies to the introduction of new seed, improved methods of cultivation or to manures.

" For the demonstration of improved machinery or manufacturing processes it is perhaps better to take the individual to the demonstration; but it can be decided in each case and with reference to local conditions what is the best course to pursue.

"I think I am not exaggerating when I say that when research has produced the material, demonstration is the foremost plank in our platform of development. Through demonstration plots, either specially set apart or on the farms of cultivators, by seed farms, through the agency of Co-operative and Agricultural Societies we are, I think, getting our results down to cultivators as rapidly as we can. A full and detailed account of our activities in this direction will be brought out at the next meeting of the Board of Agriculture, when under the presidency of my friend Dr. Mann we shall again discuss the question of the best methods of bringing improved methods of agriculture to the notice of cultivators."

It was felt that, as this subject is very fully covered by the Committee of the Board of Agriculture which periodically reviews the work done in reaching the cultivator and suggests improvements in the methods of attracting his attention, a discussion was not now called for.

The following resolution was passed unanimously :—

Resolution XI

The Conference agree that the best method of reaching the illiterate classes is by demonstration work in the village and on the farm, and emphasise the importance of the extension of this method. Under demonstration work should be included short courses in special subjects on Government farms.

Before the proceedings terminated Rai Bahadur Ganga Ram said he would like to bring forward a proposal he had very much at heart. This was that out of the funds at the disposal of the

local bodies in country districts (and he would remark that over 13 per cent. of these funds in the Punjab were contributed by the agricultural classes) there should be earmarked a substantial part for certain agricultural purposes. The chief of these that he had in mind were the supply of improved seed, the provision of demonstration farms and the establishment of agricultural schools.

On the Chairman pointing out that the Conference were scarcely competent to discuss matters of this kind, the Rai Bahadur did not press it further.

The Hon'ble Raja Sir Rampal Singh then moved a vote of thanks to the Hon'ble Sir Claude Hill and the Hon'ble Mr. Mant for presiding so ably over their deliberations, and the Hon'ble Mr. Basu seconding, this was passed unanimously.

List of Resolutions passed at the Agricultural Educational Conference held at Simla on the 18th June 1917and succeeding day.

(1) It is desirable to lay down the general principle that a method for providing trained teachers in agriculture should be elaborated in each province adapted to meet the requirements of the agricultural school system that may be in contemplation or may have been already devised for that province.

(2) The Conference consider that the question whether two-years' courses can be combined with four-years' courses at agricultural colleges should be left to local Governments to work out in the light of further experience. Uniformity in this matter is not essential. For the high schools the full college courses should provide suitable teachers. For the teachers of the middle classes it may be necessary in some cases to modify the existing two-years' course so as to give a better education in science, to be supplemented by a course in pedagogy. This development also should be worked out by local Governments to suit local conditions.

(3) Bearing in mind the importance of imparting a training in teaching to all those who are charged with instruction in schools ofwhatever character, it is desirable to require that those who attain to the standards that may be determined on as necessary, under the foregoing Resolution, should, before being recognized as qualified to teach in agricultural schools, undergo a period of training in pedagogy.

(4) The Conference accept the view which was urged by all the heads of Government Agricultural Colleges present that it is undesirable to attach training schools in pedagogy to the Colleges.

The Conference consider that the most suitable means at present of giving training in teaching methods for teachers of agriculture in agricultural schools, would be to require candidates under the last Resolution to undergo a course in a specially

selected agricultural school to which should be attached an instructor fully trained in pedagogy. For this purpose each province contemplating the establishment of agricultural schools, which has not already done so, would have to establish an agricultural school suitable for such training purposes—preferably one in each language area. When the number of agricultural schools, and consequently the demand for qualified teachers, multiplies sufficiently it would be desirable to establish a special training institution for teachers in agriculture which would remain attached to an ordinary agricultural school.

(5) The Conference are of the opinion that it should be laid down as a goal that every rural district should have one or more agricultural middle schools usually situated near to demonstration or experimental farms.

They are divided on the question whether the establishment of agricultural high schools is in the same sense desirable, since it is arguable that the boy who is going on for a University course, even in agriculture, will be better qualified by going as far as the matriculation through the ordinary high school of the Education Department. It is not considered desirable to pronounce definitely until experience has been gained of the results of establishing agricultural middle schools.

Mr. Wood wishes to qualify acceptance, so far as regards Madras, by expressing his view that for that province concentration on demonstration is more desirable than the establishment of schools.

(6) Having regard to the diversity in the type of schools which has been evolved under the Education Department of different provinces, it is not possible to discuss profitably the precise type of schools required to meet the needs indicated in Resolution 5 ; but having regard to the desirability of securing that early attention be attracted to this subject, the Conference recommend that the Agricultural Adviser should prepare, for the information of local Governments, a memorandum showing what has already been done or attempted in India in these lines.

The Conference, however, desire to emphasise the importance of practical work in any school which teaches agriculture and of having a plot of land, if not a demonstration or experimental farm, attached to the school.

(7) In view of the Resolutions which have been passed at this Conference, and of the changing conditions as affecting the expansion of provincial departments of agriculture, the Conference consider that Resolution I relating to Agricultural Colleges which was passed at the Pusa Conference should be modified and that local Governments should be left to work out their collegiate courses with reference to local conditions. They consider that each of the principal provinces of India should have its own agricultural college so soon as the agricultural development of the province justifies that step.

(8) The Conference recommend that the question of affiliation of agricultural colleges should be left to the decision of local Governments in accordance with local conditions.

(9) While desiring to emphasise the principle that the agricultural middle schools contemplated in Resolution 5 should aim at training boys who will return to the land, there would be no objection to recruiting boys from these schools, if suitable, for the subordinate posts in the Agricultural Department.

(10) The Conference accept the principle that the text-books of primary schools be adapted to the rural environment of the pupils. They consider that, where necessary, the existing text-books should be revised by the Education and Agricultural Departments in consultation, or that special text-books or syllabi should be prepared by them.

The Conference also strongly insist on the desirability of adapting primary education in rural areas more closely to rural needs. Whilst agreeing that no attempt should be made in primary schools to teach agriculture or horticulture as such, the

following suggestions are made towards the solution of this problem :—

(*a*) Nature-study should form a necessary part of the curriculum in rural schools.

(*b*) All subjects—reading, writing and figuring—should be taught in relation to rural life.

(*c*) A garden should be attached to each rural school as an aid to nature-study, though lessons should also be given in the surrounding fields.

(*d*) The teachers of rural schools should be recruited as far as possible from the rural population.

(*e*) Special attention should be paid to the training of rural teachers, preferably in a separate training school.

(*f*) The Agricultural Department should, when opportunity offers, co-operate by vacation courses for such teachers.

(*g*) The Education Department should endeavour to recruit to the lower inspecting staff a larger proportion of the rural population.

(*h*) The Education Department should also endeavour to recruit as Inspectors or District Deputy Inspectors a larger proportion of science or agricultural graduates.

(11) The Conference agree that the best method of reaching the illiterate classes is by demonstration work in the village and on the farm, and emphasise the importance of the extension of this method. Under demonstration work should be included short courses in special subjects on Government farms.

APPENDIX I.

Memorandum on AGRICULTURAL EDUCATION.

1. *Introduction.*—The subject of agricultural education may be said to have engaged the attention of the Government of India in one form or another ever since they have had an agricultural policy. Various schemes have been framed and recommended : many experiments have been tried. The results obtained have been insignificant and all early efforts may be said to have gone into the melting pot, when the expansion of the Agricultural Departments on modern lines came under Lord Curzon's Government. No useful object would be served by a description of the various policies anterior to that date, and it may at once be frankly admitted that even since the reorganization of scientific agriculture in India, we are, in matters of education still groping in the dark and that we cannot as yet claim to have attained to a solution of the question. The object of this Conference is to see whether it is not possible to make some definite progress towards a crystallised policy of agricultural education.

2. Before proceeding to a discussion of the efforts which have been made to improve agricultural education in India since 1901-05 it may be of use to consider briefly the history of agricultural education in other countries. Much of the information given in the following notes is based on the authority of Dr. Leslie C. Coleman, Director of Agriculture, Mysore, who, in a report on agricultural education published as a bulletin of his Department, has given a concise account of the system of agricultural education in Europe, America and Japan.

3. *Agricultural Education in Great Britain.*—In Great Britain neither primary nor secondary agricultural education is really well developed and the whole system is at present undergoing revision under the guidance of Dr. Fisher. University courses in agriculture are general and these are taken by young men who desire appointments at home or in India or the colonies and by well-to-do farmers or their sons who return to the management of their own farms. Occasionally young men of independent means take a course in agriculture instead of a literary or law degree.

4. The education of the actual farmer is the concern of the County Councils which in many cases, have a considerable representation on the Councils controlling the Agricultural Colleges. The methods adopted consist of short courses of lectures on particular subjects and demonstrations at various

centres, or short farmers' courses at an Agricultural College given at the slack season of agriculture operations.

5. As regards general agricultural education of children, the stage of theory and recommendation has hardly been passed. School gardens, however, are being multiplied. It has been recommended that the curriculum in rural schools should be less literary than it is at present and, with this object in view, that it should be based on the employment of manual processes as a method of education though it should not be forgotten that the *aim of practical instruction in elementary schools should always be the general development of the faculties rather than specialisd technical training.*

It is a generally accepted principle that the teachers should be able to make all the school subjects real to the child by connecting them with such object as it is familiar with outside the school, thus keeping it in touch with its environment and with what life means to it. This is the old theory of the adaptation of rural education to rural needs, and in England, as in India, the difficulty is the training and production of satisfactory teachers. As Dr. Coleman remarks, "the question of improvement in rural education is in every case intimately related to that of an improvement in the training of rural teachers." England, however, has advanced little beyond the theory of agricultural education and no actual results in practice can be cited.

6. *Agricultural Education in Germany.*—Germany possesses, or at any rate did possess, a very elaborate system of agricultural education. At the Universities there are agricultural faculties of a very high standard devoted largely to special training in research in the various sciences connected with agriculture. Another advanced course is provided by the Agricultural High School where the curriculum is somewhat more practical and general in nature.

At the stage of general agricultural education there are :—

(1) Secondary agricultural schools.

(2) Lower agricultural schools.

(3) County continuation schools—continuation classes on subjeccts connected with agriculture.

7. With regard to the secondary agricultural schools, they seem to supply a finishing education for the sons of farmers, in which, in addition to a fairly thorough theoretical training in agriculture and its related sciences, there is given a more general training in the ordinary subjects taught in secondary schools. Dr. Coleman notes that these schools are, as a matter of fact, fitted for the well-to-do classes and do not in any way reach the great mass of the agricultural population. They seem to aim at a thorough general education with special reference to the future life work of the pupils. They are comparatively few in number and have shown no very striking growth.

8. Next to these facilities for higher agricultural education come the lower agricultural schools, which are divided into (*a*) *agricultural year schools* where continuous instruction throughout the year is given for two sessions and (*b*) *agricultural winter schools*, where instruction is only given in the winter months when youths can be spared from the farm.

The *agricultural year schools* represent the first effort to provide suitable instruction for the great mass of the agricultural population. The aim is not to produce agricultural experts but to give to the sons of cultivators a training sufficiently broad and thorough to enable them to carry on their business in an intelligent manner. They may be considered as a kind of lower secondary school, *as students before admission must already have passed through the primary schools.* The course of study is a general one : the sciences bearing on agriculture predominate. The teachers are specially trained in agriculture and in the teaching of agricultural science.

9. The *agricultural winter schools* were founded to meet the needs of those who could not or would not send their sons to school during the summer months when their help was required on the farm. During the summer months when the pupils are at work on their farms, the teachers act as itinerant instructors keeping in touch with their pupils, lecturing, demonstrating and arranging for small field experiments. As regards their experimental work, they are under the control of agricultural experiment stations and in fact act as a link between such stations and the cultivators. It is noticeable that these winter schools are increasing in popularity while the agricultural year schools are falling behind.

10. There is another class of schools—*the rural continuation schools*—which may be considered. These are not separate schools, but continuation classes connected with the ordinary primary schools, the object being to broaden and deepen the training given in the primary schools. Compulsory education ends at 14 years of age and it was felt that something was wanted to fill the gap till 18, when compulsory military service begins. A certain amount of training in rural science is given but usually no regular agricultural course is attempted. The general opinion is that, so far as a training in general science goes, the schools have been fairly successful but they have not succeeded where direct teaching of agriculture has been attempted. The difficulty of getting satisfactory teachers is the main one.

11. *Agricultural Education in America.*—In America great diversity of practice is found as each State is attempting to work out its policy of agricultural education with reference to its particular conditions. The general idea, however, is a Central State Agricultural College, either attached to the existing University or as a separate Institution. An experimental station

is always attached to these colleges and the professors are also research officers. The degree to which research work is carried on varies at the different colleges.

As in Great Britain the colleges endeavour to get into direct touch with the actual farmer by means of special short courses held in the winter months when agricultural operations are for the most part at a stand-still. The colleges also organise exhibits at shows and demonstrations and short lecture courses in connection with farm institutes, while the experimental station attached to the college does a large amount of demonstration throughout the State. In fact the position of the agricultural college would seem to be that of a leader in agricultural education and a co-ordinator of all other rural educative agencies.

12. With regard to secondary agricultural education—this takes different forms. In some cases it is given as an alternative course in place of one of the ordinary high school courses and is looked upon merely as a branch of general education. The next type is the special county agricultural high school. This type has been thus described by Mr. A. A. Johnson, Principal of one of these county schools. "These county schools are strictly speaking agricultural trade schools and have for their sole object the education of the farmers' boys and girls who do not wish to take up an extensive college course but who are anxious for that form of training which will be most useful to them when they take charge of work on the home farm. The school is made the centre of the community and the farmers are free to call upon it for assistance in any line of work pertaining to farming." The course of study in these schools extends over two years and, for entrance, students are required to have completed the primary school course of 8 years.

13. Another type of school is the district or congressional school. Here *in addition* to the ordinary high school studies, boys take up agriculture. Attached to each school is a farm varying from 200 to 300 acres and the boys work on an average about 9 hours a week on the farm at ordinary agricultural operations, while 3 or 4 hours a week are devoted to blacksmithing and carpentry work. Small experiments are carried on in co-operation with the State agricultural college and experiment station, and seed testing and other scientific work is done for the farmer.

Secondary agricultural education in America was devised to meet the need felt for educating the children of farmers who were unable to take a course in an agricultural college. But below this was the large mass of children of the agricultural classes who did not go as far as secondary education and whose training stopped with 6 to 8 years of primary education. These also required some training to fit them for their future career as farmers.

14. But apart altogether from direct instruction in agricultural science in primary schools, it may be said at once that considerable progress has been made in America in adapting education to environment. Thus reading lessons are chosen with special reference to the objects which are met with daily and with which a child will have to deal when it grows up. In arithmetic, problems are chosen which have special reference to practical questions that arise on the farm and refer to such matters as (*a*) farm inventories and accounts, (*b*) land measurements, (*c*) mixing fertilisers, and (*d*) miscellaneous farm problems.

15. Primary agricultural education has been made compulsory in many States of the Union but here as elsewhere a good deal of difficulty is found in obtaining suitable teachers and before any success is obtained, it will be necessary to devise a satisfactory course for the training of teachers. Apart from direct agricultural teaching there is one method which has been attended with great success—especially in the more backward parts of the Southern States There, on account of bad methods of agriculture, incomes were low and it was quite impossible for the residents of these States to support any form of educational agency. The idea therefore of teaching agriculture in a common school was abandoned and it was deliberately decided to undertake the agricultural education not of the future farmer but of the present farmer, on the theory that if he could be substantially helped, he would gladly support better schools and so work up to a general and agricultural education in line with more advanced States. As a consequence, demonstration has been taken up to an extent which has had a most marked result on the agriculture of the Southern States. The method adopted by Dr. Knapp, whose success as a demonstrator was almost phenominal, was to select a relatively capable farmer in a given neighbourhood, to persuade him to plant and cultivate a certain amount of land in a certain way with a certain kind of seed and to rely on the natural imitative instinct to induce others to follow when once the result called attention to the superiority of the process. From the individual cultivator demonstration rapidly spread to a collection of neighbouring farmers engaged or interested in a similar crop and the result is a large body of farmers interested in the same form of improvement and, through their demonstrator, being brought into touch with the central agencies such as the colleges of agriculture and the experimental stations. It may be remarked that the personal equation has a good deal to do with it and that a large amount of the success is due to the personal influence of the demonstrator. A certain amount of work of this kind has already been done in Madras and other provinces.

16. *Agricultural Education in Japan.*—In Japan school attendance is obligatory and over 93 per cent. of the children of school-going age are under

instruction. The school age extends by law for 8 years—from 6 to 14 years of age—4 years being spent in the lower elementary and from 2 to 4 years in the higher elementary schools. A good account of the system will be found in Sir Frederick Nicholson's " Note on Agricultural in Japan."

17. The teaching of agriculture practically begins with the higher elementary schools. Science, *i.e.*, simple lessons on plants, animals and manures so arranged as to bear on agriculture and local industries, forms an item of the regular course : and agriculture may be an additional subject. In the vast majority of the schools agriculture is treated as a part of the regular course, such subjects being dealt with as soils, manures, cultivation, planting, breeding and the methods of rural economy. The instruction is perhaps the easier as the larger part of the teachers are drawn from the agricultural class.

18. After the higher elementary schools come the supplementary or continuation schools designed to give " children engaged or intending to engage in practical pursuits such general knowledge and skill as are necessary for such pursuits and to supplement the work of the elementary schools." They are additions to the elementary and middle schools and, perhaps generally, have only one short session in the winter months or between cultivation seasons : or the tuition is given in the evening. The agricultural teaching of the elementary schools is amplified : subjects such as chemistry and physics, insect and fungous disease, etc., are taught. Special attention is devoted to the training of teachers for such courses.

19. Next come the regular agricultural schools divided into B class schools and A class schools.

In B schools, pupils must be over 12 years of age and have completed at least the lower elementary school course. The course consists of general education, science and agriculture and extends over 3 years with 27 hours of study per week and a large amount of practical work on the school farm. The graduates from these schools almost all go back to their farms.

The A class are of the middle school grade with a course of 3 years which may be extended to 4. Pupils must be over 14 years of age and have completed the full 4 years' course of the higher elementary school. Pupils may also be admitted earlier but must then take a preparatory course in general education for 2 years and in any case must have passed 2 years in the higher elementary school. Post-graduate and special short courses are also attached to these schools. A large proportion of the pupils of these schools return to their farms : some enter the agricultural department or become teachers of agriculture. In the vacations the teachers act as itinerant

instructors while the school farms serve as seed distributing centres. The teachers of these schools are highly qualified agricultural graduates and practical agriculture is taught by selected expert farmers.

20. At the top of all come the agricultural college of the University and two high schools of agriculture. The duty of all three is mainly the turning out of experts and research workers and advanced teachers. At the University besides the regular courses in specialized subjects, there are also subsidiary courses of 3 years, the pupils in which are from a lower educational grade, namely from the middle school and must be the sons or brothers of actual farmers cultivating 12 or more acres. These consist of a practical farming course *plus* an agricultural education and much attention is given to the practical work on the farm. As an indication of the scope of the University faculty, it may be noted that there are no less than 25 professorial chairs while for subsidiary courses there is a staff of over 50 professors and assistant professors and lecturers. It may be added that itinerant demonstration and instruction is carried to a very high degree.

21. *Conclusions.*—From the above review of what has been done for agricultural education in different countries, it will be seen that in every case there is some form of compulsory general education and that a special agricultural training is only super-imposed after a certain stage in general education has been reached. It is also noticeable that a great deal more attention is devoted to the training of the actual cultivator than to that of those whose connection with the subject will not be practical. On the other hand, the courses at the University are deliberately designed in most cases for training of teachers and officials of the agricultural departments and few private students take them.

22. *Agricultural Education in India.*—In considering what has been done in India in regard to agricultural education, it will serve little good to recapitulate the earlier efforts in this direction. There was a great deal of groping in the dark and a great deal of zealous effort to solve the question but no definite results were achieved. When the Department of Agriculture was enlarged and organised as the result of Lord Curzon's policy, the efforts of the agricultural department were devoted at first more to questions of higher agricultural education than to the lower stages. The first few years of the Agricultural College scheme ended in disappointment and failure and at the Board of Agriculture in 1913 it was decided that much greater latitude must be given to provinces in the framing of their programmes of agricultural teaching, and that the teaching of agriculture must be adapted more to the general standard of education in the provinces and to the stage of knowledge reached through agricultural research and experiments. This is the present

position and agricultural colleges are tentatively experimenting with various courses which they think will best suit their local requirements. This *laissez faire* policy cannot, however, be considered to be altogether satisfactory and in order to co-ordinate a policy, a meeting of agriculturists and educationalists was convened in February 1916 at Pusa to see if something more definite could not be laid down. The resolutions passed at that conference have been referred to Local Governments and it will perhaps be convenient to deal with the various questions in the order in wich they were taken at the conference.

23. *Agricultural Colleges.*—The conference first considered the question of agricultural colleges. While emphasising the principle that agricultural colleges should aim at giving a liberal and scientific education which should be as complete as possible, the conference was forced to the conclusion that this was not in all cases practicable. But it considered it desirable that Upper India should have at least one college at which the education should not be restricted to the training of men for subordinate departmental requirements. This college should be affiliated to a University and should give the highest courses of general agricultural training possible. At present there are 4 colleges in Northern India—Cawnpore, Lyallpur, Nagpur and Sabour—but the educational qualifications of the students attending the existing colleges are not in most instances sufficiently high to justify the general raising of the standard at all colleges.

24. The necessity for providing a certain number of colleges in India with a liberal and scientific education of a high standard is accentuated by the findings of the Public Services Commission. In pursuance of the recommendations of that Commission, the agricultural department in its superior grades will ultimately be manned mainly by Indians and it is in every way desirable that such Indians should be trained at an Indian College of Agriculture supplemented by a post-graduate course at Pusa. For the present it can hardly be expected that all the existing colleges in India should teach up to this high standard and it is for consideration whether it will not be sufficient at this stage to aim at having one college in Upper India, one in Bombay and perhaps one other, which will be able to teach up to the high standard proposed. Even at its maximum expansion, however, the cadre of the agricultural department in its superior grades will not be unlimited, and although a number of appointments will be found for graduates of these colleges in other grades of the service even this number will not be very large. It has been suggested therefore that the holding of the University degree in agriculture should not act as an absolute limitation on the branches of Government service to which its holders can obtain admission and that, wherever possible, these higher grade agricultural colleges should be affiliated to a University in order to give the

necessary *cachet* to the degree to be conferred. Again it has been represented that it would be advantageous to broaden the basis of education which supplies candidates for Government service generally, and that the efficiency of a Deputy Collector or Extra Assistant Commissioner or any other subordinate revenue officer will not be lessened by the fact that he has taken a degree in the science of agriculture rather than in literature or in law. It must of course be understood that the standard of this degree must be high and that the agricultural faculty must have a strong representation of people practically interested in agricultural development. The Agricultural College at Poona is already affiliated to the University of Bombay and the arrangement is reported to work satisfactorily. It seems advisable to extend it to one or two other colleges with a view to providing candidates for the superior grades of the agricultural service. The Madras Government considers that the affiliation of the colleges at Coimbatore would be premature and inadvisable. The Punjab Government desires to affiliate the Lyallpur college to the Lahore University ; and the Government of Burma contemplates the eventual establishment of an agricultura college as a development of a school of Agricultural Research, to be attached to a proposed University at Rangoon. In other provinces where a college already exists that does not come under this scheme, this should be devoted to the training of the subordinate staff of the agricultural department and for the development of such courses for the training of actual cultivators as may seem desirable and suitable with regard to local conditions.

25. At the Board of Agriculture in 1913 approval was expressed of the scheme by which a course of 4 years was divided into two courses of two years —the first 2 years qualifying candidates for subordinate posts in the agricultural department while the second 2 years was of more scientific character leading up to the full diploma or B. Sc. degree. The Pusa Conference in 1916 considered it possible to arrange that students who were taking a 4 years' course leading to a degree should be able to qualify by an intermediate examination for employment on probation in the lower ranks of the agricultural department, confirmation to depend on the passing of a test in practical farm work on the conclusion of the probationary period. This policy may perhaps be accepted as suitable in the case of colleges which are not up to the University standard, and are not affiliated to a University. Moreover the Government of Bombay which has experience of affiliation to the University would have no objection to the proposed qualification by an Intermediate examination which would be sufficient for appointment to the subordinate ranks of the agricultural department, and this indeed seems to be the general opinion of Local Governments. On the other hand it has been urged that affiliated colleges should aim at a higher standard of general and scientific

education and that, if Government are to establish agricultural colleges of first class standard, they must eliminate the lower course suited to subordinates and confine themselves purely to advanced scientific work. Other arrangements would then have to be made for training the subordinate ranks of the agricultural department.

26. *Vernacular Courses.*—The Pusa conference decided that a vernacular course should not be made a department of the college work but that there is no objection to the giving of courses of instruction in practical agriculture on the college farm or other farms of the department without relation to the work of the college.

With this view a number of Local Governments agree but the Government of Bombay are of opinion that though such courses need not necessarily bear any relation to the work of the college, the Principal of the college might, if otherwise qualified, be the best organiser for such a vernacular course. It is worth noting that this view reflects American practice where the Agricultural College and not an executive Director of Agriculture, organizes and co-ordinates education and demonstration. The Punjab Government see considerable advantages in retaining the vernacular course at Lyallpur as it helps to maintain the close connection of Lyallpur with the agricultural community which is a valuable asset. The Lieutenant-Governor of the United Provinces also sees advantages in having his vernacular course at the college, while in Madras, on the other hand, the vernacular course would be quite out of place at the college on account of the diversity of vernaculars. Madras in point of fact is rather acting on the American method of demonstration. Demonstrations are given both on Government farms and on the cultivators' own farms : lectures in the vernacular are given at fairs and festivals : bulletins and leaflets are circulated : seed is distributed through rural co-operative societies.

27. It seems to be of less moment whether vernacular courses are held at the central college or on provincial farms provided that the instruction is adequate and that close touch is kept with the central college and the department of agriculture. It will be seen from the foregoing account of agricultural education in Europe and America that this close link with the central authority is considered most important.

28. *Agriculture in Primary Schools.*—The Pusa Conference considered that all attempts to teach agriculture in primary schools should be definitely abandoned but they desired to reaffirm Resolution No. XIII of the Board of Agriculture at Coimbatore which laid down that a sympathetic co-operation between the educational and agricultural departments in adapting rural education to rural needs was of great importance. The Pusa Conference further

suggested that the holidays and vacations and hours of study of rural schools might be arranged with special reference to the agricultural calendar. While Local Governments generally accept this principle, it is clear that there is a strong feeling that the retention of an agricultural tinge in text-books is of use and that nature-study should be extended. It is felt, however, as has been the case in other countries, that the whole success of any such scheme depends on the efficiency of the teachers and that these at present are extremely difficult to get. While it is safe to adopt the view that direct teaching of agriculture in primary schools should be definitely abandoned, arrangements are desirable by which text-books may be revised in such a way as in the course of ordinary education to deal with subjects with which the pupil is familiar and with which he will have to deal in future life.

29. *Bombay Vernacular Agricultural Schools.*—The Pusa Conference then passed to a consideration of the Bombay system of vernacular agricultural schools which aim at taking boys of 13 to 14 years of age who have passed the 4th vernacular standard and continuing their general education for two years adding to it instruction in agriculture. This scheme corresponds to some which have been referred to in dealing with agricultural education in other countries—notably those of Japan (paragraph 19)—and has this element of soundness in it that it is given when ordinary education has reached a certain stage and that general education is continued while instruction in agriculture is being inculcated. The experiment is favourably reported on but it is expensive, the difficulty of obtaining suitable teachers is considerable and it may be difficult to apply it generally. The opinions of other Local Governments are not particularly favourable to this scheme and most of them prefer a plan by which actual cultivators are trained on demonstration farms.

30. *Education of the actual cultivator.*—In the present state of general education in India, it is not easy to lay down any definite principles for the education in agriculture of the general mass of the population. A consideration of the subject in other countries of the world shows that no such form of training is attempted until a thorough grounding in general education has been completed. The Bombay vernacular schools appear to be on the right lines but it is doubtful if they can be generally adopted. In the present condition of education in India it seems desirable that Government should aim rather at an increase of demonstration than at systematic teaching of agriculture. At the same time it is necessary to develop the higher agricultural education so as to give facilities to students who desire to enter the agricultural department as well as to those who want a University degree in agricultural science instead of literature or law. From such a course it will be possible to equip the agricultural department in the superior grades and in the

higher posts of the provincial service and to secure the materials from which to draw the teachers for any elaboration of agricultural training that may follow.

31. For the rest agricultural schools in provinces will perhaps be able to provide a training for the provincial and subordinate agricultural department and to adjust their courses so as to admit students who want an agricultural training to qualify them for the management of their own estates. Particular and special courses can be added to meet the local demand and to suit local requirements.

32. For the great illiterate mass of the population it will probably be necessary for many years to come to rely on demonstration. As education and co-operation spread there will be a higher standard of instruction on which it will be possible to super-impose the various forms of agricultural education which have been introduced in other countries. But it is doubtful whether India should disregard the general experience of these countries and attempt to give an agricultural education otherwise than on the basis of a sound general education. For the present perhaps the wisest policy seems to be, by improved agriculture and co-operation, to raise the general standard of education. When that object has been achieved it will be easy to add anything that may be required in the way of specialized training.

33. From a consideration of the foregoing it appears desirable to consider the question of the policy to be pursued in regard to agricultural education under the following headings :—

(1) Should the policy be to raise Indian Agricultural Colleges immediately or ultimately to a University standard ?

(2) Should canditates for the lower grades of the agricultural service be educated at these colleges or at separate agricultural schools ?

(3) Would agricultural high schools on the American plan be successful ?

(4) Would continuation or seasonal schools, on the analogy of the German winter schools, be suitable in this country ?

(5) Should vernacular schools on the Bombay model or on the lines of the A and B class schools of Japan be generally adopted ?

(6) Should the text-books of primary schools be adapted to the agricultural environment of the pupils ?

(7) For the illiterate classes should we at present attempt anything beyond demonstration ?

(8) In view of the universal experience in all countries of the difficulties inherent in any advance in agricultural education owing to the lack of properly trained teachers, is it possible, and, if so desirable to establish, in conjunction with any of the above measures training classes or departments for agricultural instructors.

APPENDIX II.

DEMI-OFFICIAL LETTER DATED 5TH JUNE 1917, FROM S. HIGGINBOTTOM, ESQ., M.A., B.Sc., SUPERINTENDENT, DEPARTMENT OF AGRICULTURE, EWING CHRISTIAN COLLEGE, ALLAHABAD, TO THE HON'BLE SIR CLAUDE HILL, K.C.S.I., C.I.E., I.C.S., MEMBER IN CHARGE OF THE DEPARTMENTS OF REVENUE AND AGRICULTURE AND PUBLIC WORKS, GOVERNMENT OF INDIA.

I have been very carefully over the literature sent out to enable us to prepare for the informal conference to be held in Simla on June 18th, 1917.

I have also thought much on the various problems involved and the following occurs to me :—

1. I heartily agree with the fundamental proposition laid down by you in your introductory address at the Pusa Conference where you say as the aim of the Agricultural Department " Our needs seem to be, first and all the time, to improve the agricultural methods of the country."

Further I agree in the main with your analysis of the way to secure this as being by means of :—

(*a*) Scientific investigation.

(*b*) Courses of instruction to fit Indians to help in those investigations.

(*c*) Instruction in practical agriculture.

(*d*) Courses of practical and theoretical instruction to fit men to give this instruction in practical agriculture and also to qualify for the subordinate appointments in the agricultural service.

(*e*) Instruction for agriculturalists.

It is when we come to the detail, and to the consideration of the best way to the accomplishment of these ends that we seem to grope and get lost and have so much discouraging failure.

Therefore I state the position and requirements for successfully carrying out agricultural improvement in India, as it appears to me. The *résumé* (which has been circulated) of what is being done in other countries is valuable, but omits, what to my mind is the most full of suggestion for India,

namely, what is being done in Canada and the Philippine Islands; and in some important details the analysis of methods in the United States does not quite represent the practice, *i.e.*, the generalization that :— " an experimental station is always attached to the central agricultural college and the professors are also research officers " is misleading. Take the case of the State of Ohio. Its agricultural college is located at Columbus. Its experiment station is located at Wooster, eighty miles away. The Experiment Station does not give any instruction to students nor is the Experiment Station staff related in any way to the agricultural college. At the Ohio State university a large majority of the professors do not go in for research work, but spend most of their time in teaching the regular candidates for a degree. To keep themselves in touch with rural conditions throughout the State, they go out in the demonstration train. They attend local and country fairs where they act as judges and lecturer, and lecture at granges and agricultural clubs. To keep up with their subjects they read the experiment station literature.

Further the Federal Government maintains its special staff of investigattions and research men at Washington who have no teaching work to do. It also maintains laboratories and experiment stations for special problems ; as at Brownsville, Texas, and the Desert Laboratory at Tuscon, Arizona.

From my investigation of American methods I would say that only a very small minority of professors in American agricultural colleges are at the same time actually engaged in research and teaching. It is only a few very exceptional men who can do both successfully at the same time.

I speak of this because in much of the Indian literature the idea seems to prevail that men in the Imperial and Indian agricultural service be investigators and at the same time teachers, and with respect to the development of the agricultural colleges it has been laid down that the educational side of the college must not interfere with the work of research and experimentation. Now, if a man has been doing his work as a research student, it is not likely that he has had sufficient leisure, which can now be filled up with teaching students without hurting his investigations. I believe it is true that most of the men in the Imperial and Indian agricultural service have been trained for laboratory and research work, and any teaching and practical agricultural work is an extra for which there has been no special preparation and is therefore a great burden to the man and likely to be poorly done.

But teaching is a great profession by itself, apart from the subject matter taught, and it is only the result of a lucky coincidence that a man trained for research and laboratory investigation turns out to be a good teacher. Most good teachers are trained teachers.

In the United States and Canada men study scientific agriculture with various aims and objects in view depending upon personal inclination and fitness. One studies with a view to becoming a special investigator in one particular line, no man is considered to be able to carry on more than one main branch of agricultural investigation, *i.e.*, he may take soils, or field crops, or animal husbandry, or horticulture, or agricultural chemistry, etc. He does not expect to teach. Another man prepares to teach one of these special subjects, and actual lecturing, and reading to keep himself informed in his own particular line, take up all his time. Another prepares to carry out on his own farm the application of the latest discoveries in agricultural science.

It is as impossible for an agricultural teacher to teach all the subjects of agriculture to college standards as it is for one man to teach successfully every subject in the curriculum of an arts or science college, let alone do research work in addition.

Therefore I take it that there should be staff of scientific investigators and "researchists" to cover every aspect of Indian agriculture; the result of whose labours would be available as class-room matter for the agricultural colleges.

The staff of the agricultural colleges should be chosen for their training and ability to teach particular subjects of agricultural science.

This is in accord with the great economic law of specialization of function.

The professor in an agricultural college should devote his main strength and time to teaching, research with him should be in the nature of a hobby and stimulant.

If this is agreed to, then the scientific investigators would naturally be under the Department of Agriculture and the college staff under the Department of Education. In most countries vocational schools are under the Department of Education and are regarded as Educational institutions. The product of the vocational school is the raw material, as it were, of the vocation or profession.

I submit it is not wise to expect a man who spends all his time in drilling students in the rudiments of a science, to contribute to the enlargement of our knowledge of that science, much more so is it unwise to expect an undergraduate to be able to "investigate" or "experiment." As an undergraduate his main business is to learn how to use the tools of his profession. It is post-graduate work of the most exacting kind that prepares him to independently add to the sum of human knowledge, as an experimenter and investigator.

The staff of investigators, and research laboratories to enable them to carry on their work, is inadequate in India. They must be multiplied many-

fold before India gets the results she needs. A larger number of investigators would lead to a more than proportionate increase in knowledge, for the work of one would be suggestive to, and stimulate another. Agricultural Science admits of few universal dogmas, *e.g.*, the behaviour of one variety of wheat under one set of conditions is no indication of what it will do under other conditions. That implies that successful agriculture over a wide area means the mastery-in-detail of the varying conditions in the different parts of that area, *i.e.*, an investigator working under Bengal conditions with respect to any single crop, cannot say that the same results will follow with the same crop in Madras or the Canal Colonies of the Punjab. It is for this reason that a separate research institute properly staffed is necessary for each separate soil and climatic area of India, and why each area will need its own college to teach the results of the investigations of that particular area. The pure sciences upon which agriculture is based :—Chemistry, Physics, Biology, Geology and Meteorology are the same the world over. The Agriculturist has to apply the conclusions of these sciences to any particular local conditions, and these are so varied and complex that no individual or institution is sufficient for them all. Therefore the necessity for multiplying research and teaching institutions.

Throughout all the discussions it emerges that what keeps back progress is lack of funds. This is a very real problem. I believe, however, that funds would be more readily available if those concerned realized that expenditure in agricultural development, whether for scientific investigation or instruction in agricultural science, is an investment, returns to which are as sure as to the canal projects in the Punjab, and that it is only as the investment is made that the returns will come. Note what is being done in the midst of war by England and Canada, what large sums are being spent now, while in India things are being crippled and India is falling back instead of going forward because less money is being spent than in normal times.

Events are moving rapidly in India and in no aspect of human endeavour more rapidly than in the demand for agricultural training. A few years ago the agricultural colleges had empty hostels and class rooms. That condition no longer exists. The work of the pitifully small staff of investigator-teachers has been so successful in the few things they have been able to undertake that the educated public of India has faith in the department and the small farmer knows the seed the department gives is more profitable than local varieties, and he believes in it as far as it has told him anything. He is eager for more. While it is true that a great many who offer themselves for study in the agricultural colleges, look forward to Government service and that service not necessarily agricultural, an increasing number are

offering themselves year by year who expect to return to their own estates and put into practice what the agricultural college has taught them. In this respect agricultural education in India but follows the rule as observed in other countries: in the beginning most of those trained failed to return to the land: They accepted positions as investigators and teachers of agriculture. But after a few years a majority of those trained returned to the land, and investigation has proved that these trained men have made so much more out of their land than the untrained farmer that the cost of the training has been repaid many times over.

I intended to take up each point in order but I fear it would make a book not a letter. I have been much interrupted. I think the other points are subordinate to this main one. I have sent a number of Canadian Agricultural Gazettes to Mr. Mant; they go very deeply into the subject.

Outline—

Scheme for the furtherance of agricultural development in India. By that is meant the increase in the unit per acre at a decrease in cost per unit, to teach the farmer how to produce larger crops per man and per acre at an increased profit. Requires the co-operation of Agricultural and Educational Departments.

The Agricultural Department should maintain separately :—

I. (*a*) Research Institutes: mostly laboratory work, where crops are investigated with respect to increase in yield; most favourable conditions for growth; control of diseases and pests which affect them; increase in content of some desirable factor, *e.g.*, butter-fat in milk, coloring matter in Indigo; Manure; introduction of new and more profitable varieties. Each soil and climatic area should have along with the Research Institute its own:

(*b*) Experiment station: mostly testing under field conditions. Plant breeding. Experiments are undertaken to find out. Results may be positive or negative, but are equally valuable in either case. It is as good to know what cannot be done as to know what can be done. What is learned positively is then available for propagation.

This may be done by :—

II. (*a*) Demonstration Farms.

The best seed, the best manures, the best seed-bed, the best cultural methods, the best harvesting methods, the best marketing methods are shown by actually doing them in the best known way.

(b) District demonstrators, qualified men who tour a given district and induce individual farmers to follow the best known practice with respect to seed, culture, implements, manures, harvesting and marketing.

Canada during the war has increased its staff for this purpose : they are known as district superintendents. The United States has 1,960 country agents at work in its territory. Federal and State appropriations of these men are $8,100,000—Rs. 23,00,000 or approximately Rs 9,000 per year per country agent when local funds are added.

III. Local and provincial annual fairs where the fair is so interesting that side-shows do not find it profitable to be present. The department offer prizes to individuals, to villages, to boys' clubs, to girls' clubs, etc. ; sends lecturers ; sells and distributes improved tools, implements, seeds ; gives demonstrations under the farmers' conditions ; induces, by showing that it pays, farmers to send their sons to agricultural training institutes.

IV. Press Bulletins, well got up, accurate, well illustrated, cheap, well distributed, in the different languages.

The Education Department should have as its field :—

I. In every rural school at least one trained agricultural teacher who would manage a school garden and help to supervise home gardens. The school garden would grow the best local crops in small plots. The boys would be formed into clubs to grow on their fathers' farms a small well area of a special crop. If the boy grows a better crop than the father, the father is won over to the new methods.

Agriculture as one of the subjects for the higher classes.

This applies to all rural schools of whatever grade—primary, middle and high.

II. At least one properly equipped college with adequate staff giving graduate work. It would train men :—

(A) to fill posts in the agricultural department, *i.e.*—

(a) Laboratory investigators.

(b) Experimenters.

(c) Demonstrators.

(B) For teachers in schools, in colleges.

(C) To Farm for profit.

Men would farm their own land.

Men would farm for large landowners.

Details of staff of agricultural college.

For preliminary work :—

1. Teacher of English.
2. „ „ Mathematics.
3. „ „ Physics.
4. „ „ Chemistry.
5. „ „ Geology.
6. „ „ Botany.
7. „ „ Zoology.
8. „ „ Entomology.
9. „ „ Economics.

Normal Department. For those who look forward to teaching agriculture.

10. The theory of education and teaching.

For purely agricultural work :—

1. Agricultural Engineer.
2. Soils including irrigation and drainage.
3. Field crops.
4. Horticulture.
5. Animal Husbandry.
6. Dairying.
7. Economic Botanist.
8. Economic Entomologist.
9. Farm Manager, in charge of students' practical work.
10. Rural Economics including Farm accounting.
11. Bacteriology.
12. Meteriology.

And in addition as many instructors and demonstrators as the number of students demanded.

Each college should have a farm attached where the student would get his practical work.

Class rooms and laboratories for each subject and sufficient for the number of students.

Students would do practical work in a thorough fashion. They would also attend fairs, demonstration farms, etc., to make themselves familiar with the actual work of the farmer and his betterment.

Is this a practical measure? Can this programme be carried out? It all depends upon the faith and vision and courage of those in charge. I believe it can. There is already a large amount of the necessary staff and equipment at hand, the additional research and laboratory men, well qualified, can be obtained from Great Britain.

For the agricultural college, for the rural schools, for district agents, for demonstrators, men would have to be brought out from Canada and the United States. I would advocate getting the best men available in the first instance, as the ideal is to fill most of these positions with Indians when they have been properly trained. With the present inadequate staff and equipment it is impossible to properly train Indians. What I have seen of the later products of Poona, Nagpur, Lyallpur, I am much encouraged with, and believe that excellent material but awaits training.

SAM HIGGINBOTTOM.

June 5, 1917.

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